WORKING GROUP MEETING

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)
	) Docket No.
WORKING GROUP MEETING	)
	)

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

THURSDAY, MARCH 24, 2005

10:12 A.M.

Reported by:
Peter Petty
Contract No. 150-04-002

STAFF PRESENT

Matt Trask

Kae Lewis

Shahid Chaudhry

Gary Klein

Mike Hartley

Monica Rudman

Paul Roggensack

Ricardo Amon

Lorraine White

ALSO PRESENT

Elizabeth Burton
Lawrence Livermore National Laboratory

Robin Newmark
Lawrence Livermore National Laboratory

Paul Massera
Department of Water Resources

George Qualley
Department of Water Resources

Lon House
Association of California Water Agencies

Laurie Park
Navigant Consulting

James McMahon
Lawrence Berkeley National Laboratory

Mary Ann Dickinson
California Urban Water Conservation Council

ALSO PRESENT

via teleconference

Tom Crooks
Navigant Consulting

Martha Davis
Inland Empire Utilities Agency

James Park
Los Angeles Department of Water and Power

Bob Wilkinson
University of California Santa Barbara

Gary Wolff
Pacific Institute

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P R O C E E D I N G S

10:12 a.m.

MR. TRASK: We have a court reporter today so we will be producing a transcript of today's meeting. And we'll distribute that. The Committee needs to decide whether or not they want to make this transcript public. In general, I don't think I have any problem with making our communications here public, but I just wanted to kind of throw that out and see if anybody has any concern with that, whether or not it would limit our conversation in the future, both at this meeting and future meetings. Speak now or don't.

All right, --

MR. CROOKS: I'm going to have to withhold all my secrets then.

MR. TRASK: Okay.

COURT REPORTER: Please identify yourself on the phone when you speak.

(Laughter.)

MR. TRASK: All right. Was that Tom? One of the things that's going to be a problem with the court reporter is he needs to know who is speaking. So we all have name tags here in front of us, but folks chiming in on the phone,

essentially every time you talk you'll need to just quickly say your name and title.

And speaking of which, somebody on the phone is coming through with a lot of noise right now. Hello -- somebody on the phone, you're really bringing in a lot of noise. Yes, like that. Is somebody on a cellphone?

This is bad. Hello -- can the folks on the teleconference chime in and introduce yourselves?

DR. WILKINSON: Bob Wilkinson and I'm going to mute when I'm not on. UC Santa Barbara.

MR. TRASK: Bob, are you on a cell phone or outside by any chance?

DR. WILKINSON: No, I'm not; I'm on a landline, and I'm going to mute the whole time I'm not speaking.

MR. TRASK: Great, okay. We just -- we're getting noise here from somebody and we're trying to isolate it. Just went away. Okay, Bob.

Who else do we have on the teleconference?

MR. CROOKS: Tom Crooks of Navigant Consulting.

MR. WOLFF: Gary Wolff, Pacific

Institute.

MR. PARK: James Park, Los Angeles Department of Water and Power.

MR. TRASK: Okay, we're still -- somebody is bringing in a lot of noise. It sounds like somebody's outside. Is anybody outside or on a cellphone? Okay, well, we'll try and keep this manageable. It looks like it's okay for the moment.

So on the phone we have Tom Crooks, Navigant; Bob Wilkinson; Gary Wolff; and James Park with LADWP. Anybody else?

Let's go around the room here. I'm Matt Trask, Project Manager for the Water/Energy Relationship Study.

MS. LEWIS: I am Kae Lewis; and I am in the Energy Commission's demand analysis office.

MR. AMON: Ricardo Amon with the energy and agricultural program at the Energy Commission.

MR. KLEIN: Gary Klein with Commissioner Geesman's Office.

DR. BURTON: Elizabeth Burton, Lawrence Livermore National Laboratory.

DR. NEWMARK: Robin Newmark also from Lawrence Livermore National Laboratory.

MR. CHAUDHRY: I'm Shahid Chaudhry with the public programs office of the California Energy Commission.

MR. QUALLEY: George Qualley with the Department of Water Resources, State Water Project, power planning and contract management.

MR. MASSERA: Paul Massera, Department of Water Resources; working on the water plan update.

DR. HOUSE: Lon House; I'm the energy advisor to ACWA.

MR. HARTLEY: Mike Hartley; I'm with the California Energy Commission's public programs office, water and wastewater.

MS. RUDMAN: Monica Rudman with the California Energy Commission.

MR. ROGGENSACK: Paul Roggensack with the California Energy Commission Public Interest Energy Research program.

MS. PARK: Laurie Park, Navigant Consulting.

MR. TRASK: Very good. Kae will be facilitating the meeting mostly from here on out, but I wanted to start a little bit just about what we want to get accomplished today.

You have the agenda in front of you. As I was telling Kae, the biggest problem with this effort, things are flying so fast, that often my thinking is not in advance of my actions. I thought a lot about what we wanted to do today, and it's pretty much along the line of what we have there in the agenda. But I'm thinking that increasingly it's going to be hard to separate the process out, especially in identifying barriers.

So I think I want to kind of shift to more of a parallel approach to whatever we start with we want to identify the barriers. We can save, I think, for the afternoon session more of a brainstorming session on how to overcome these barriers.

But I think that is a key part of this study, is trying to identify things that work; identify the things that are against those things that work, that lessen the effectiveness of those things that work; and how we can overcome that.

So, I've asked folks to start with kind of their top three ideas of how to manage the -- energy management in the water sector. And that includes conservation, efficiency, peak load reduction, generation, virtually anything that

would affect the net energy use in the water sector.

And I'm also trying to keep it, you know, a couple other criteria is we want to make sure that the environment benefits, the society benefits from these programs, are considered as well.

And I thought maybe we could just sort of start with an example. And I'm going to pick on Gary here because I know this is one of his favorite programs -- and, like I say, this is just throwing out a for-instance -- the use of recirculating pumps. When you're standing at your sink and you're waiting for the water to get hot, rather than that water just going down the drain and into the wastewater facility, that it recirculates back to the hot water heater.

And that is one is a way to save water. The energy savings are maybe not so obvious. So us being in an energy forum, I want to keep a good concentration on the energy effects of each program that we discuss.

And we have a couple other people joining us. Jim, do you want to introduce yourself?

DR. McMAHON: Good morning; I'm sorry

I'm late. I'm Jim McMahon from Lawrence Berkeley National Lab.

MR. TRASK: And we have Mary Ann Dickinson from the CUWCC, who is in and back out, but she'll be with us.

Also we're going to try here, I'm going to stand up at the dais, or this podium thing up here, and take notes on screen for those of you participating offsite, monitoring offsite. We are broadcasting this on our webcast. You can see the documents that we're seeing up on our screen. Maybe not all that clearly, but hopefully clearly enough.

So, I'm going to shift over there and start taking notes. Kae, if you want to see if you can get the ball rolling.

MS. LEWIS: Just to mention, you have two handouts that were out on the table, and also they have been emailed, so that if you're on the line you should also have those. And that's the agenda for today's meeting, and also the reported notes from the last group meeting that we had on March 10th.

Okay, as Matt said, we want to focus on strategies. And this is going to refer to those

scoping questions. At our last meeting, March 10th, we focused on the questions 1 to 3, and talked about energy requirements in the water sector; data needs; impact of climatic conditions; and future trends.

So now we want to sort of follow up on that information and talk about strategies for reducing energy use in the water sector. And how we might actually get these implemented.

This is the format that we're going to use. Just to sort of warm us up, we're going to talk about current strategies. Maybe do that for about 45 minutes or so. And just list the current strategies your agencies are doing; things that are already in place; and perhaps tried and true.

And then we're going to start talking about proposed strategies, and this will be the focus for the rest of the day. You were asked to think about your top three, and so we will be expanding upon that.

We're thinking that we'll have lunch maybe after we develop those two lists and have some general discussion on them. And after lunch talk about criteria for ranking these strategies, and perhaps homing in on some specific

recommendations. Find out if there's some consensus in the group.

This is not going to be a scientific ranking by any means, but we're going to try a little evaluation process and see, as I said, if there's some consensus.

And ultimately what we want to do is to take some recommendations through the whitepaper to the Commission in this energy report process. So this will provide some fuel for that.

And then we want to focus on overcoming the barriers to some of our choice strategies. And we're aiming for adjourning like 4:00, 4:30; that means we have a lot of work to do.

And then we'll talk about just the next steps, April 8th workshop and any future meetings of this group here.

I want to point out that really the format that we used last time was a lot of general discussion. We're going to be a little more structured today, because we have so many things we want to accomplish.

We're going to use kind of a brainstorming format, which Matt's going to be recording information. When we talk about current

strategies we just want people to name them off. We're not going to ask questions about them. We're not going to pass judgment on them. We're just going to get the list down. And once that list is completed, then we'll have general discussion. And then we'll go on to the next. Okay?

So those are kind of the rules. Any questions?

MS. DICKINSON: I have question. Would it make sense to start off with the standardized list of the 14 conservation measures that everybody is doing, and then add to that, rather than start with a smattering and then try and form it into the 14 that people are doing?

I mean it --

MR. TRASK: I think that's a good way to go. Again, for the water professionals, I think people pretty much have a good idea of the kind of water savings you get out of the programs that are underway. So if we could also discuss the energy effects of each of those, I think that would be a good way to get going.

MS. DICKINSON: Because there are a lot of programs that are outside of the traditions,

you know, 14 that have been there forever. And those are the add-ons to the basic structure. And the programs that water agencies are adding on, almost all of them have energy implications.

So, I think it would be good to get the 14 out of the way first.

MR. TRASK: Okay.

MS. LEWIS: Okay. Also, how we want to structure this is sort of do it in two parts. One is to focus on end use separately. And then lump together water stages together, so conveyance and treatment and so forth. And I suggest that we begin with end use, and then go on to the next set of stages.

MR. KLEIN: That means switching the agenda slightly? We're going to go to B on the --

MS. LEWIS: Yes, yes.

MS. DICKINSON: We'll go to B first?

MS. LEWIS: Yes. I think starting with end use is a good idea, as I look who's here around the room.

MS. RUDMAN: Would those 14 typical programs, are they all end use programs or do --

MS. DICKINSON: No, no, and I'm just making a list of the ones that are only end use.

MS. RUDMAN: Okay.

MS. DICKINSON: But we can pull from that. Some of the 14 are soft programs like public information and school education. So I wouldn't propose to put those on the list unless you thought that was appropriate.

Of the 14 there are a number of them that are end use, and we could start with that.

MS. LEWIS: So you mean the standard BMPs?

MS. DICKINSON: Yeah. And if you want to start with the end use ones, you know, we'd have residential indoor auditing and outdoor auditing; those are end use. That's number one.

Number two --

MR. TRASK: Mary Ann, do you want to expand, just describe what that means, basically.

MS. DICKINSON: Okay. This is the first best management practice, and it basically requires a water agency to audit or survey the inside of the homes and the outside landscape uses of their residential customers. And to make recommendations on efficiency to the customer, and in some cases actually provide them with the efficiency devices.

Which coincides with best management practice number two, which is a full indoor retrofit on the residential side toward the water conservation legal standards. In BMP two it doesn't involve actually replacing the toilet, but that's a separate one. And that's actually going in and replacing the toilet, as well. So that's an end use BMP in itself, is replacing high-flow toilets with low-flow toilets.

You can retrofit them, which is why they're actually separate measures. But we recommend going in and retrofitting the toilet all together.

MR. TRASK: Yeah, toilets are a separate item if you're going to map the stuff that CUWCC has, you need to put toilets on another line item.

MR. KLEIN: Okay.

MR. TRASK: It just isn't --

MS. DICKINSON: It can be combined. I just want to make sure that everything we've got starts up on there.

MR. KLEIN: I understand that. If we're going to have to go back and say did we get them all, we're better off tracking them as you track them. That would just be simpler.

MS. DICKINSON: Yeah, there are different cost effectiveness thresholds for retrofitting a toilet versus replacing it outright, which is why we've separated them. It's more expensive to actually change out the toilet.

Are we talking about the water utility system as an end use in this?

MR. TRASK: No.

MS. DICKINSON: No, okay. Then we won't go there.

MR. KLEIN: They're going to be in the other category of conveyance and --

MS. DICKINSON: They'll be in the other category. So metering will be in that other category, then, as well?

MR. KLEIN: Maybe -- talk about it for a minute.

MS. DICKINSON: Okay. Best management practice four requires metering of all end use connections. So, that's going to be rapidly superseded by the state law that's just been passed. But those who are participating in the MOU programs are committing to retrofitting early on a fast track. So that's number four.

Number five is large landscape outdoor

auditing and budgets. That best management practice requires the water agency to set budgets for all of those large landscape areas that have dedicated irrigation meters. And so the end use there is usually commercial; sometimes industrial; sometimes multifamily residential; and sometimes homeowners associations, residential homeowners associations. Any large landscape use that's probably an acre or more ends up in the BMP. And there's standards for requiring tight irrigation budgets for those landscapes.

BMP six is replacing the clothes washer. Giving financial incentives for changing out the residential clothes washer. And now that the CEC has adopted a residential standard we will be probably tightening our best management practice to be incentivizing the super efficient. We already have in our current version, it incentivizes more the super-efficient washers that are well below the CEC standard. But that's going to be a rolling target as we go along.

MR. KLEIN: You're incenting the EnergyStar stuff plus the water efficiency, right? You're really after that water --

MS. DICKINSON: Well, I wouldn't say the

EnergyStar stuff, because there's some EnergyStar washers with a water factor of 13. And so we are saying that you have to -- you get 1.4 rebating a washer that meets the CEC standard right now of 8.5. And you get more points the lower you go on the water factor.

So it's basically incentivizing the super-efficient approach.

MR. KLEIN: So super efficient means super-efficient water use?

MS. DICKINSON: Water use.

MR. KLEIN: Okay.

MS. DICKINSON: Right. We have not tied in the energy use. We used to just say do an EnergyStar washer and we'll give you a rebate. And then we learned the hard way that that wasn't working.

MR. TRASK: Is there any data available on the energy use of super-efficient washers?

MS. DICKINSON: Well, we did some work when you all were considering your standard, and I can bring it -- I can send it to you. We did an evaluation of how much water and energy would be saved by the CEC standards.

We could carry that analysis further and

say, assuming that the universe was half supplied by super efficient, the universe of replacements, what that would end up being. We could do that for you.

MR. TRASK: Okay.

MS. DICKINSON: Because the spreadsheet already exists.

MR. TRASK: Great.

MS. DICKINSON: And Michael Martin has all that stuff, too.

So that's six, that's clothes washers. Seven is public information, so that's not really an end use.

Eight is school education; that's not really an end use, either.

Nine is commercial and industrial and institutional conservation. That requires the water agency to go to the end user and evaluate where water efficiency is appropriate. Whether it's in an industrial process; whether it's in just the plumbing; whether it's in outdoor water use. Whatever opportunity there is for reducing water use.

And the benchmark that's set is you want their whole commercial and industrial water use to

go down 10 percent over a ten-year period. So that's the benchmark that's set with that one. That's being done --

MR. AMON: Question on that one. You have access to data on total water use in industrial and commercial, as well as institutional?

MS. DICKINSON: We have an online reporting database where the water agencies that are participating in these programs, they give us their breakdown of their water consumption, yeah.

MR. AMON: And --

MS. LEWIS: We're going to have general questions and discussions later. We just want to get the list.

MS. DICKINSON: Yeah, get the list.

Ten is wholesale agency conservation, so that's not an end use.

Eleven is conservation pricing, which I would argue is probably an end use. That affects all customers. And conservation pricing can be peak pricing in terms of seasonal pricing. It's not yet time of day, because we don't have time-of-day meters in water. But, you know, that's certainly an area to look at.

I think Dr. House mentioned that in his presentation early on, the whole time-of-day metering issue.

Twelve is conservation coordinator. That's not an end use.

Thirteen is ordinances. They're required to adopt waterwaste ordinances that limit the amount of waterwaste that goes on, you know, within a municipality. Gutter-flooding, non-recirculating fountains, car wash retrofits, just all kinds of -- there's a list of ordinance possibilities that the agencies are given. And so they work with the municipalities to get these ordinances adopted.

And then 14 is the toilets, which we mentioned already.

So that's the list.

MR. TRASK: I'm sorry, what was the last one there, Mary Ann?

MR. KLEIN: That's only 13. Missed one. So now we only have the 13.

MS. DICKINSON: Well, I didn't put system audit stuff down there, because you said that's going to be in conveyance.

MR. KLEIN: Okay, thank you.

MS. DICKINSON: So that's the 13th one.

MR. TRASK: What is the wholesale agency use one?

MS. DICKINSON: That's where wholesale agency, like a metropolitan water district, has to provide financial incentives to its retailers to do these programs. So it's a financial and technical assistance benchmark.

MS. LEWIS: I don't know if everyone can see this list here; it says types of strategies. And the kinds of things that Mary Ann was just talking about and that come to the forefront of our mind are probably the first three things, the energy savings, peak savings and water savings that save energy or peak, is real obvious.

But I think it's also fair to add in a strategy list things that fall under the category of planning and coordination and public policy. So specific strategies for coordination between water utilities and electric utilities is something that, you know, is most definitely a strategy. And there could very well be some current examples.

MS. DICKINSON: Well, a current example that's a good one is the standard setting for

clothes washers and pre-rinse spray valves that we worked on with you. I think as a strategy that's a really effective way of achieving savings, because it's guaranteed.

MR. KLEIN: So the strategy is to create standards?

MS. DICKINSON: Standards are -- that's my favorite strategy of all. It's free conservation to water agencies. They don't have to pay for it. It happens automatically in the marketplace.

MS. LEWIS: I recall at one point in the past that SMUD was looking into joint metering with water agencies. That may be an issue that they get serious about now in Sacramento County.

I'm wondering if anyone knows of any examples of that in California? Joint --

MR. TRASK: The first one I have here is residential indoor and outdoor auditing. Do we want to just go down the list, or do we want to -- now you're essentially trying to draw the conversation more to specific programs it sounds like.

MS. DICKINSON: Well, there's more than just this list. Now we can start adding. Now we

can go back to what you wanted to do, which is to brainstorm all the other things. Because there's lots more in addition to that that people are doing.

MS. RUDMAN: Could you explain the list for some of us people that are new. Does this mean that every water agency is required to do this? Or these are just the ones that they've agreed to do? Does everybody do this?

MS. DICKINSON: Well, this comes out of a memorandum of understanding that was signed in 1991 between the environmental community, the water community and actually the State Board. And it was a way to avoid litigation on mandatory targets that the State Board was going to set at the time.

So anyone who signed on, whether they were an environmental group or a water agency, if they signed on to that memorandum, they were committing to doing these programs and to advancing these programs.

We have 180 water agencies that have signed on to this, which represents about 75 percent of the water deliveries in California. So the little guys aren't all signed up, but all of

the big ones are.

And they are doing these programs in the ten-year timeframe that's been specified.

MS. RUDMAN: Thank you.

MS. DICKINSON: It started in '91, but it was revamped substantially in '97, so the timeframe is '97 to 2007 right now.

And each new BMP, as it's added, like the new clothes washer one, is a different added-on type table.

MR. CHAUDHRY: I think, you know, on the bigger picture probably we should also be concerned of the water wastage through leaky pipes. Because I just came across a recent report which mentioned that every day just in California about 222 million gallons of drinking water is being wasted through different reasons.

And if you consider southern California's picture, it takes about 10,000 kilowatt hours per million gallon to transport water from northern California to southern California. And in perspective that's a very big number, 222 million gallons just drinking --

MS. DICKINSON: Well, that's the other BMP that Gary was saying is missing. BMP three is

system water audit and leak repair.

MR. CHAUDHRY: Right. And I think, you know, that can be done through water audits, leak detection programs, back -- testing and maintenance programs, and other actions like water use surveys, water efficiency use surveys.

MR. KLEIN: So, Shahid, is that about the end user or the system that supplies it?

MR. CHAUDHRY: It's the systemwide, just -- but definitely there is a big chunk which can be wasted through end users, just like, you know, when we -- good example probably is when we turn our tap early in the morning on and warm water comes from the water heater located at a distance. That's your typical and favorite example, I guess, Gary.

MR. KLEIN: Yeah.

MR. CHAUDHRY: So, if we waste just one gallon of water, every household, in the morning, just multiply the number of households in California and you will get the picture.

And I think, you know, another approach to reduce this water waste from leaking systems is implementation of conservation best management practices. That's one issue.

The other thing is I think in the last working group this was mentioned that over the period of time water consumption on per capita basis is reducing. But I just came across another -- which says no, the picture is the other way around. In fact, about a decade ago the water consumption was about 200 gallons per capita per day. And now this has gone up to 229 gallons per person per day.

So I don't know which is the correct answer, whether it's reducing. But it's --

MR. TRASK: What's the source of that information, Shahid?

MR. CHAUDHRY: The source of this information is Public Citizens Critical Mass Energy and Environment Program.

MS. LEWIS: Okay, let me say we're just getting the list down, okay. We don't want discussion yet.

MR. CHAUDHRY: No, I'm just going to -- that's my next step, Kae.

MS. LEWIS: Okay.

MR. CHAUDHRY: Okay. Now, I was on the review panel for desalination proposals to the Department of Water Resources prop 50 funding.

And after skimming through those proposals I came across with a number of steps the water districts are taking to reduce water consumption through different measures.

Some of the measures Mary Ann mentioned. And the other ones are ultra-low flush showerheads, if you can add to the list, please?

MS. DICKINSON: It's already there. It's part of number two.

MR. CHAUDHRY: Okay, well, coin-operated and high-efficiency washing machines. High-efficiency commercial dishwashers. Efficient x-ray film processors in the hospitals. Water pressurized brooms.

Okay, now, districts are implementing these programs through different actions as Mary Ann mentioned, that they are providing vouchers, they are providing financial incentives, and so on and so forth.

But these are some of the measures which are actively being pursued by different water districts in the state. And there could be a lot more. Time-of-use water meters probably is another approach. CEC is already in discussion with Association of California Water Agencies.

MS. LEWIS: Is there any other current pre-rinse practices that you know about? That you want to add to this list right now?

MR. CHAUDHRY: I think no; these are some of -- I mean most of these Mary Ann mentioned already in there on the screen. But I just mention a few more, you know, to be added to this list.

MS. LEWIS: Okay, well, let me just ask. I know Mary Ann has additional ones. Is there anyone else who would like to add something to this list current practices?

DR. WILKINSON: -- Mary Ann's list, she may cover them.

MS. LEWIS: Did you want to add to the list, Bob?

DR. WILKINSON: When it's my turn. But go ahead and let Mary Ann finish first.

MS. LEWIS: Oh, okay.

DR. WILKINSON: Just put me in the queue and then when she's done I'll add a few.

MS. DICKINSON: Thanks, Bob. Pre-rinse spray valves in restaurants are one. We've probably, by the time we finish with our program at the end of this year we will have replaced

almost half of them in the state.

Weather-based irrigation controllers. And the tying of the irrigation that the controller is controlling to a water budget.

MR. TRASK: I used to know how to spell.

MS. DICKINSON: He's got commercial dishwashers on there already. Icemakers. We have a classic dilemma with icemakers. You either have a very energy efficient icemaker or you have a water efficient icemaker, but so far we don't have both. So that's a product development opportunity. And we're looking at that.

And cooling towers. Now some of these commercial and industrial items are all part of BMP nine, but cooling towers and saving water through cooling tower, proper cooling tower maintenance, is an important one for us. It's a lot of water.

MR. KLEIN: Do you have anything on evap coolers?

MS. DICKINSON: We don't have a lot of statistics on evap coolers, but, you know, that's something that we're looking at a lot. John Keller's doing quite a bit of work on that.

MR. TRASK: You mean retrofitting with

coolers, or --

MS. DICKINSON: Well, we don't want to go towards evaporative coolers because they will use water, but what we want to do is we want to take a look at what the actual savings would be for eliminating them. But the cost effectiveness issues involved with that --

MR. TRASK: Because in general from an energy point of view wouldn't an evap cooler be slightly better than a standard --

MS. DICKINSON: Well, that's right. That's like the icemakers. The tradeoff is either water or energy with evaporative coolers.

MR. TRASK: Anybody done anything quantifying --

MR. KLEIN: There are some people in the southwest that have been looking at it.

(Sound over of webcast.)

MS. LEWIS: Excuse me, who's speaking?

MR. TRASK: That's Mary Ann. Somebody is listening to the webcast while they're on the phone and that's coming through on your phone.

MS. LEWIS: Oh, there's a delay?

MR. TRASK: Yeah, there is a delay.

(Laughter.)

MR. TRASK: In case somebody goes into a profanity rant we can cut you off or something.

(Parties speaking simultaneously.)

MR. KLEIN: In New Mexico they're, in fact, doing exactly that. They're replacing evap coolers because of water issues and retrofitting houses with air conditioners, making the energy/water tradeoff. And they have a huge program to do this in New Mexico.

I think it's been studied at some length by the southwest energy efficiency program, swenergy.org. And so I'm willing to bet there's a couple reports on their website on this question.

MS. DICKINSON: And we had hot water systems similar on the list at one point. I want to make sure they get back on because --

MR. KLEIN: What's the best management practice called, the proposed one?

MS. DICKINSON: Well, it isn't a best management practice yet. It would be a potential best management practice that we would be adopting and adding to the MOU. But we are very interested in the hot water issue because of the wastage involved there.

MR. KLEIN: So to call that, it would --

it's hot water distribution system improvement?

MR. CHAUDHRY: Or tankless water heaters.

MS. DICKINSON: That's one type, yeah.

UNIDENTIFIED SPEAKER: Wetless?

MR. CHAUDHRY: Tankless water heater. There's no tank. These are electric, you know, and they are hot water on demand.

MR. TRASK: And would that also, back to Gary's --

MR. KLEIN: It's on-demand pumping. It's on-demand pump --

MR. TRASK: On-demand water heaters.

MR. KLEIN: No. Tankless water heaters is the right way to call those.

MR. TRASK: Okay.

MR. KLEIN: And then it's on-demand pumping. And then another category for new construction we'll call it structured plumbing.

MS. DICKINSON: Well, the whole issue of new construction, I think, we've been receiving requests for a best management practice on new construction, is I think there's an opportunity, getting back to the standards discussion, to build it right the first time and not have to go back

five years later to retrofit.

So I think there's a lot of work that we can do there. But there are some communities that have adopted some ordinances for appropriate water use in new construction, you know, mandating limitation of turf and, you know, setting some standards.

So, some work has already been done in that, but it's a really wide open area that needs to be explored.

MR. TRASK: Gary, can you structure plumbing? Is that addressing like trying to keep your hot water pipe runs short and insulate the hot water pipes, that kind of stuff, is that what you're talking about?

MR. KLEIN: Yes, it is. I don't want to spend a ton of time on it now. I can talk on it for several days. But it turns out that the simple version is if you want to waste a cup of water while you wait for hot water to arrive, and I mean an eight-ounce cup, then you can't have more than a cup of water in the pipe between you and the source of hot water. In fact, you can't have that much because you've got to heat the pipe.

So you tell me how much water you want to waste per hot water event, and I'll tell you how big the pipe can be. It's really fairly simple when you work it that way.

We've come up with techniques that allow us to deliver hot water reliably in any given home today, wasting between one cup and two cups of water waiting for the hot water to arrive. And that's pretty darn good, given what we've got with one water heater and just structuring the plumbing properly. We've thought about it a lot.

So that's the idea and the technique.

MR. TRASK: And fairly minimal cost it sounds like. Just --

MR. KLEIN: Yeah, marginal cost --

MR. TRASK: -- to the design.

MR. KLEIN: You have to plan the design properly. And in general, from what I can see in most new construction, it actually costs less to do the plumbing right than to do it the way they're doing it today.

There's an awful lot of extra pipe running around.

MS. LEWIS: Gary, have you captured, I mean the current practice, here? I mean is it

officially --

MR. KLEIN: Is it being done? Oh, yes, just add a "d" to the structure; it should be structured plumbing with a "d" at the end. Other than that I think you captured it.

MS. LEWIS: Okay. We can have more discussion about it.

MR. CHAUDHRY: Some districts are also introducing water-free urinals at their facilities. Also they are providing incentives for artificial turf for playing grounds.

I don't think we talked about dual flush toilets or not, but that's another practice which is being implemented by some districts.

MS. DICKINSON: (Laughter). I think it's "al".

(Laughter.)

MR. TRASK: Dueling flushes --

MS. DICKINSON: Dueling flushes, I like that.

MS. LEWIS: Okay, any other current practices you'd like to add?

MR. TRASK: Bob, do you want to --

MS. DICKINSON: Yeah, Bob wants to --

MS. LEWIS: Bob?

DR. WILKINSON: Yeah, you've got a very good list. Some of the energy experts there on the call are enumerating bunch that really reflect a good understanding of the water world. So this is exciting to me.

A few things quickly. One is just background on the BMPs. You may have skipped over that. For some in the room that aren't as familiar with the genesis of this whole best management practices list, but simply they've been going for about 15 years, right, Mary Ann?

MS. DICKINSON: Yeah.

DR. WILKINSON: Started about 1990 or so?

MS. DICKINSON: '91, yeah.

DR. WILKINSON: '91, and we started working on this in the late '80s. And it's important to emphasize that what that list reflects, the BMPs, themselves, are practices that are already in place, cost effective and happening around the state.

There are many others, including some on your list there, that are also happening, at least in some places, and are good measures but are not necessarily on the list yet. And so there's a

process within the California Urban Water Conservation Council BMP process to add new best practices through time. But it's a somewhat conservative and slow process, as these things get to be.

So, it's an excellent starting point. And we should look at perspective BMPs and other practices out there, as you're doing. So that's just kind of a side note.

I think, I don't know if you call landscape retrofits, but that's a huge one in terms of volumes of water. And also somewhat peak sensitive, so a good prospect.

In the water world there's something called CII, commercial institutional and industrial. And that's the sector, the nonresidential sector, of urban that is less consistent, also less well understood. But has lots of prospects. So I would put a note there.

And there's been some very good work done on this, both by energy folks and water folks, looking at a range of opportunities. Some of the options like ozone treatment for cooling which allows for additional cycles before blowdown, and saves water and so forth, would be

good to have on there. But there are a whole string of processes.

In general, once-through cooling processes. That would capture your x-ray machines, some laser operations and many other older cooling systems are actually still using once-through potable water run-though and down the sewer. So kind of a catch-all category to look for those options would be important. And surprisingly, there's still a lot out there.

MR. KLEIN: So, Matt, in your taking your notes, once-through cooling is the problem.

MR. TRASK: Right.

MR. KLEIN: So, --

MR. TRASK: And, I guess, once-through cooling.

MS. DICKINSON: Yeah, it's all --

DR. WILKINSON: Many different applications of it. I just looked at a laser operation at a museum last week, and they were too worried about the laser to do anything different. But, of course, there are other cooling options that would save a lot of water.

So, you know, I think these could be refined. I would suggest in this process, just a

suggestion, there are a lot of folks in the California Urban Water Conservation Council network and program that might want to kind of take a look at this and see if they could enhance the list once we're done today.

Just as a suggestion, maybe Mary Ann could follow, just vet it through that list and see if there are some additional specific items that people are working on now that we could add in that would make a difference.

MR. TRASK: Um-hum. Well, Bob, what we're trying to do here is identify the existing ones. And then we'll probably go on to sort of our top ten hoped-for programs.

DR. WILKINSON: I understand. I'm talking about existing things we may miss, because there's a lot of good stuff.

MR. TRASK: Okay.

DR. WILKINSON: The last one I'll mention is both East Bay MUD and Metropolitan Water District, the two biggest urban purveyors, are still providing something close to 10 percent, it may be 8 percent now, of their water to agricultural uses within their service areas. It's surprisingly large still.

So there's two big ones that I was thinking of. One is the overall conveyance loss that was mentioned already, the system loss that really should be on the radar screen.

The other is opportunities to work with agriculture and in particular in those more energy intensive applications where anything from irrigation systems to other practices that would improve water use efficiency for growing things, whether it's landscape or crops, in those areas. It would be worth putting on your list.

MR. KLEIN: I know there's some people here who know about the programs that are already active for the ag sector. We ought to raise those now.

MS. LEWIS: Well, we're going to be focusing on the ag sector at a different time.

MR. KLEIN: Is that separate?

MS. LEWIS: Yeah.

MR. KLEIN: That's not an end use? Okay. We're talking about urban end uses now.

MS. LEWIS: Yeah, in regard to paying urban rate for water. It's --

DR. WILKINSON: I mention it --

MS. LEWIS: Yeah, okay --

DR. WILKINSON: -- because it often slips through the cracks, and there may be some very good cost effective programs. If you're going to pay people to replace toilets, which I think we should, it's a good thing to do, there are some options similar to that to help farmers that might be comparable.

And people tend to forget about those that are on the urban systems. They tend to think about ag out in the Central Valley and forget there's a lot of ag within these urban zones.

MR. KLEIN: So, Kae, do we want to raise any of those now, or do you want to hold those for another day?

MS. LEWIS: Would they be substantially different than ag in general?

DR. WILKINSON: The two differences might be the energy intensity of water in some of those area. Take, you know, avocado production in anywhere from where I am here in Santa Barbara all the way down to San Diego. Very significant energy savings with that kind of a system.

So there's kind of a gray area between urban landscape, urban agriculture to more extensive agriculture. There's a continuum there,

but I guess I just put a placeholder here for our list, because there may be some good cost effective options for both energy and water savings that we shouldn't avoid missing.

That is not in the urban BMPs, and that was the deliberate choice made 15 years ago, even though the urbans provide, you know, a significant percentage of water for this purpose.

MS. LEWIS: Okay.

MR. TRASK: Well, Bob, other than shifting to drip irrigation, and then I guess also the controllers that would respond to changes in weather, anything else that you can think of that would fit into that category?

DR. McMAHON: I have one. It has to do on the energy side you worry about peak.

MR. TRASK: Right.

DR. McMAHON: So I think shifting things to offpeak is important in the ag.

MR. TRASK: Sure. Sure.

DR. WILKINSON: I think that's true. There's some soil practices and some other things that farmers are doing that really can make a difference. Mulching practices and so forth that really can make a big difference on water, and

therefore on the energy. And also on time of when they need to irrigate, versus when they can slack off.

MR. WOLFF: This is Gary Wolff. Also there's tail water re-use that's becoming more common. That is the water at the low end of the field is captured instead of being allowed to drain off. And then it's repumped to the top of the field. It's a way of both conserving the water, and you know, using the water more efficiently. But it also captures pesticides or nutrients that would otherwise run off.

So there's more tail water re-use occurring. And that -- supplemental energy.

MS. DAVIS: This is Martha Davis. One other concept that applies both to the agricultural, but also to the urban, on the irrigation systems there has been some new spray head nozzles that give you much more even coverage and a smaller throw, so they really actually conserve quite a bit of water.

So there's technology upgrades. And this is going to be particularly important in the urban setting. Because frankly the weather-based controllers are -- right now they're fairly

disappointing. They're fairly primitive; they're not easy to use; they can lock in wasteful irrigation strategies. They aren't always effective at reaching the goal.

Whereas, if we could figure out ways to do a better job of retrofitting the actual irrigation system so that they aren't leaking and they're using the newer, more efficient spray head nozzles, that's going to be a huge amount of your water savings.

MR. TRASK: Martha, thanks for joining us, by the way. Do you want to give yourself a quick introduction.

MS. DAVIS: Sure. Martha Davis; I'm an Executive Manager for policy with the Inland Empire Utilities Agency. We're a municipal water agency located in the southwest corner of San Bernardino County. And we are a distributor of imported water. We have a seat on the MET.

But we also do recycled water, regional sewage treatment and do a lot of innovative renewable energy projects. We have the first centralized digester that's using cow manure and other organic materials in the state.

MS. DICKINSON: Matt, can I just follow

up on --

MR. TRASK: Sure.

MS. DICKINSON: -- on her comment. One of the studies that the Council is going to be doing over the next couple of years is a study of the savings from these weather-based irrigation controllers.

And I completely agree with Martha about the changing out of the irrigation systems. It's very expensive to do that, but that's definitely one of the issues in landscape water efficiency, is the leakiness of the actual irrigation system, itself.

But the studies on the irrigation controllers have been spotty. And now there's going to be 5000 controllers installed throughout the state. And we'll be studying, as a third party, the savings impacts of those controllers. So we'll know once and for all.

MR. TRASK: My system is designed to have one plugged in, so if you need a volunteer.

(Laughter.)

MS. DICKINSON: Always need a volunteer.

MR. CHAUDHRY: Matt, just a comment on load shifting. It may not necessarily reduce your

energy consumption, but it will bring your cost savings due to rate structure, so --

MR. TRASK: Um-hum. You must have been reading my mind, Shahid, because I did want to bring that up a little bit. I put out sort of a brainstorming email last week about how storage is the key to peak load reduction.

And one of the responses I got back from somebody who's not here but, was that, you know, conservation and efficiency will always be our cheapest and best option. And that is certainly true, I believe.

But I did want to just sort of emphasize that there is environmental benefit to offpeak reduction, just because when you're on your hottest days, you're starting up every single generator you can find, those last ones that are being started up are very inefficient. They're generally peakers, just jet engines sitting out there wasting a tremendous amount of heat.

So if we can shift any energy use off of that peak to the nighttime, you'll be going to much more efficient power plants, baseloaded power plants. I don't know if there is any quantification analysis that's been done, but

there is a definite quantifiable benefit by limiting peaking power use and relying more on base power use when you can.

I just wanted to throw that out there for the water people, I guess, more than anybody else.

So that's why I did say, you know, storage is the key. If we could find ways to increase our storage then we could probably keep a lot of pumps off that are otherwise cranking away in the middle of the day in late July.

MR. KLEIN: So, on existing programs are there any existing energy programs that affect water? I'm thinking about the PG&Es and the big utilities in the state, SMUDs, anybody.

MS. DICKINSON: The icemakers. The incentives for energy efficient icemakers impact water.

MR. KLEIN: Right, so we're willing to trade energy for water in those cases, right?

MS. DICKINSON: Right, we are.

MR. KLEIN: So are there any others anyone's aware of?

MR. TRASK: Yeah, maybe we just want to go down the list and think of that, because there

are a few that just sort of come to mind that could have potential greater energy use. Most of them, no. I mean obviously auditing, if you're going to survey your homes and just look for recommendations for efficiency, there you're going to save both water and energy.

Retrofitting with --

MR. KLEIN: It's not clear -- these are the water ones, and it's not clear that the water retrofits absolutely save energy, but they certainly do, if they save water, therefore they didn't have to pump it.

MR. TRASK: Right, right. There are a few water conservation programs that would increase energy use. Some that may be sort of a wash on energy use, neutral energy use. And that's the kind of thing that we won't be able to fully analyze in this study, but at least we could start identifying those areas where perhaps we don't have enough information to really make that decision, which program you go with.

MR. KLEIN: We might want to invite, at one of our next meetings, someone who's running the programs for the utilities. I mean they're very standardized programs for the most part, so

it would --

MR. TRASK: Sure.

MR. KLEIN: -- be pretty straightforward to get one or two people to come in and talk with us about --

MR. TRASK: Well, that's a good idea, or opportunity to talk about our next meeting. Which is a workshop, the public workshop, on April 8th. I certainly hope all of you will be able to participate in that. And also, just a side note, this will be the next opportunity for all of you to be able to address the Commissioners directly.

But one of the panel discussions that we're going to have there will be led by PG&E and Edison talking about their rate structures for water agencies, time-of-use energy use -- or energy metering, things like that.

So there will be a good opportunity at the workshop on April 8th to grill the utility representatives about that. And then they'll also bring their conservation people, as well.

MR. CROOKS: Tom Crooks with Navigant Consulting.

MR. TRASK: Yes.

MR. CROOKS: I'm primarily the

background of energy, cost effectiveness and program planning. I want to ask what may be a very naive question to you folks, but in the cost effectiveness development of measures in utility electric efficiency programs, currently the cost effectiveness does not include source, conveyance, treatment, distribution and wastewater treatment as cost elements. And it seems they should.

Has this been addressed by the group?

MS. DICKINSON: It's number eight.

MR. TRASK: Not yet. That's sort of later today, Tom, as we'll start looking on the water agency side of the meter, about their water and energy use.

MR. KLEIN: In fact, Tom, in some way it has partly been done. When we did the clothes washer stuff together effectively that was accounted for in the cost of water. Right, Mary Ann?

MS. DICKINSON: Um-hum.

MR. KLEIN: So it's been done at least once that we're aware of. It's a good idea and we may want to think about doing it more, but --

MS. LEWIS: Let me ask if anyone wants to add to this current list, and then I'd like to

open it up for general discussion, which people are showing a tendency to want to start.

I'd like to add something to this list, and I think the effort of the energy report to engage people in the water industry about energy use and to try to get a consideration of energy costs into the calculus of the water industry, I think, is an important strategy.

MR. TRASK: Essentially to coordinate energy and water planning, that's what I wrote down here.

MS. LEWIS: Okay, you can put it that way.

MR. CROOKS: Very much so --

MS. LEWIS: But to get the costs of energy considered in water planning.

DR. NEWMARK: I wanted to add that if you're having representatives of some of the utilities speak at a future -- either at our next meeting or another one, there are some agencies who are responsible for both water and power, both generation and distribution. And getting their take on how they internally coordinate their water and energy planning.

MR. TRASK: Um-hum, well, we have --

DR. NEWMARK: Some of them don't do it at all. It's a very compartmentalized --

(Parties speaking simultaneously.)

DR. NEWMARK: Right. And --

MR. TRASK: Actually we have probably the best example of that, Los Angeles Department of Water and Power. James, are you still there?

MR. PARK: I'm here, yes.

(Laughter.)

MR. TRASK: Do you care to dive into that --

DR. NEWMARK: Sorry about that.

MR. TRASK: -- pool, to use a water pun?

MR. PARK: Not at this time.

(Laughter.)

MR. KLEIN: It seems to me you have to have seven or eight people in order to make that decision, right?

MR. TRASK: I mean we have the same problem here in the Energy Commission, you know, the third floor doesn't talk to the fourth floor, and the fourth floor doesn't talk to the second floor.

MR. AMON: I would add to the suburban -- the water delivered to agriculture from urban

water districts. They could do a better job on pump testing. There's a lot of -- they need to pressurize that water that is coming -- well, there's a couple things.

One is the district, some districts will be delivering pressurized water to the farms directly, but then usually there's a booster pump to get that through the system. And there could be a pump improvement there.

MS. LEWIS: Ricardo, is this something that's occurring now? I want to transition to the proposed.

MR. AMON: Oh, okay.

MS. LEWIS: This is something you want to see happen?

MR. AMON: I guess so.

MR. TRASK: I think he's saying it's just not being done very well. It's a way of finding those leaks. Is that what you're referring to, Ricardo, is just a hydrostatic test, occasional hydrostatic tests of systems so you can find leaks, you can find places to improve pumps, things like that?

MR. AMON: Yes.

MR. TRASK: Okay.

MR. CHAUDHRY: I think this is more about pumping efficiency to see, you know, how effectively efficient the pump is working.

MR. AMON: May be --

MS. LEWIS: Okay.

MR. AMON: -- sorry. There may be already some districts that are providing some services to their agricultural customers in the pump end of it, and maybe that could be part of your list. So pump testing, pump repair, pump efficiency.

MR. WOLFF: This is Gary Wolff. I have a couple to add when there's a break.

MR. TRASK: Go ahead, Gary.

MS. LEWIS: Okay.

MR. WOLFF: Okay. Recreational water use by hot tubs and swimming pools. Flood control and sewage pumping on premises of a customer. Someone's got a sump pump or they have a bathroom that's below the level of the sewer line. They typically have a lift up to the sewer line.

And commercial and industrial buildings steam tables, you know, for food preparation and presentation.

There may be some others that we're

missing, but Bob and I are working on, and will be presenting on April 8th, our best comprehensive list of the categories of energy use throughout the modeling work we're doing that we talked about at the last meeting.

We'll be presenting it on the 8th so that people can give us feedback of what might be missing. But we'll have a more comprehensive list at that time. So we'll take the list that's being done here today and add and subtract just to focus on the assumptions, if you will, as opposed to some of the programs that are in the current list.

MS. LEWIS: Okay, thank you.

MR. TRASK: Okay. Two more?

DR. McMAHON: Yeah, two more. These fall in the strategies of education and motivation. And I'm thinking of information tools, particularly web tools. So databases, an example, might be, you know, a WaterStar analogy to EnergyStar to make that information available both to consumers and to utilities.

Also a similar information tool, but we talked about auditing, but I'm having my benchmarking tools where they actually contain the list of what the options are that you can possibly

do. And that could be web-based, or it could be a spreadsheet. We do that kind of thing for industrial plants, for example.

And I guess I'll hold the third one in reserve because it's a new technology.

MS. LEWIS: Thank you.

MR. ROGGENSACK: One thing for the urban ag. I don't see use of graywater up there.

MR. TRASK: Is that being done now, Paul?

MR. ROGGENSACK: I believe so.

MR. TRASK: Okay.

MR. ROGGENSACK: That's sort of agricultural in the urban zone.

MR. TRASK: Are you talking about direct graywater or are you talking about treated wastewater?

MR. ROGGENSACK: Direct graywater.

MR. TRASK: Okay.

MS. LEWIS: Okay, I'd like to move into proposed. And I'd like to make sure there's no more clarifying questions on the list that we have.

Okay. Then let's do that. And perhaps what we could do this time, since persons were

asked to come with their top three strategies, if we could just take them one at a time, go around the room and take them one at a time.

If you've got one to offer, we'll just do sort of roundrobin style.

MR. TRASK: I'll start it with my storage one.

MS. LEWIS: Do you want to say a few words about that as you're putting it up there? Just a few.

MR. TRASK: Yeah, well, just in general, if we could put in small storage tanks -- they're generally called day tanks -- on rooftops, commercial customer rooftops. Even down to residential, you know, there could be a way then to especially shift energy offpeak to where you can just store water in those during the night, and then drain them during the day, gravity drain them during the day.

It was an idea that I just threw out there. Obviously it would be difficult, I think, to fully analyze the benefit or cost of that. But I think it's something worth study.

MR. KLEIN: So the idea is that we're going to store water up high in the building and

then use it inside the building?

MR. TRASK: Right.

MR. KLEIN: Okay.

UNIDENTIFIED SPEAKER: It's being done all over the world.

MS. DICKINSON: Yeah, it's very prevalent in the Middle East and --

UNIDENTIFIED SPEAKER: Everywhere.

MS. DICKINSON: -- everywhere.

MR. KLEIN: Everywhere they're worried about losing pressure.

MR. WOLFF: Yeah, I was going to say, it's typically a -- it's a response to a system inefficiency. I'm not sure we want to be -- we need to evaluate it, of course, but I'm not sure we want to be going in that direction. It's something that people do when their system doesn't function very well.

MR. TRASK: Right, so ideally -- it's not an ideal solution, but it may be, I guess, a stopgap measure while the energy system catches up. And truthfully this is, just what Gary said there, this is actually an energy system limitation; it's not a water system limitation.

We already are forecasting that this

summer --

MR. KLEIN: Both.

MR. TRASK: -- yeah, it's both, yeah, it is. But I would think perhaps we can agree here that the energy situation is a little bit more critical in the very immediate future --

MS. DICKINSON: Only because we had rain this year.

(Laughter.)

MR. TRASK: Yeah, that's true.

MS. DICKINSON: A lot of rain this year.

MR. TRASK: Yeah, here we are with DWP announcing a rate cut in water, at the same time power is going up, so --

MS. DICKINSON: Would you be willing to expand your storage concept to include stormwater or rainwater capture?

MR. TRASK: Sure, I'm doing that at my place.

MS. DICKINSON: Because that actually is something that's happening, and it's especially prevalent in other parts of the country. We don't do much of it here, but there are a couple of examples. But it would be part of the storage concept.

MR. KLEIN: Let's keep it separate because it's --

MS. DICKINSON: Keep it separate. Okay.

MR. KLEIN: -- sort of different.

MR. TRASK: Well, yeah, because of this study I now route my gutters into my swimming pool through some filters. So I haven't had to fill up my swimming pool all winter, whereas past winters I would, usually once a month or once a week, start up my pump and run it for a couple of hours to fill up the pool.

MR. KLEIN: So that lobbies for everyone having a swimming pool.

MR. TRASK: Yes.

MR. KLEIN: Okay.

(Laughter.)

MR. KLEIN: Just wanted to know where that logic went.

(Parties speaking simultaneously.)

MR. TRASK: -- storage, too, you know.

MR. WOLFF: Well, you know, another place that Matt's idea might be useful is large commercial buildings --

MS. LEWIS: Excuse me, who's speaking?

MR. WOLFF: I'm sorry, Gary Wolff.

MS. LEWIS: Okay, thank you, Gary.

MR. WOLFF: Large commercial buildings, you know, with new construction. There are ways to integrate water storage for heating and cooling in upper levels of the building. And in these larger buildings there's probably some supplemental pressurization going on so the toilets will flush, you know, on higher floors, as well.

But it might be a place in new construction to do something like this.

DR. HOUSE: Matt, this is Lon House. What I'd recommend so we don't get confused, is if you split these into peaking opportunities and conservation opportunities. Because these, all of the ones that we're talking about right now, or the first three, had to do with peaking, which will probably increase your energy use.

And all the conservation programs we've talked about today, and conservation of water is very much like conservation of electricity, it may not have a peak impact. It may have a volume impact or an energy impact, but it may not have a peak impact.

So I think it would be worthwhile to

differentiate between conservation that just saves water in general and the peaking opportunities. Because the peaking opportunities are much more limited.

MR. TRASK: Right. Yeah. I agree with that. And that's something maybe when we go back and start discussing both current and proposed, that's something we want to keep in mind.

MS. DICKINSON: Actually we've taken a look and most of our best management practices are conservation programs not peaking programs. It's really landscape that for us is the big peaking program.

But we're looking at the water peak, not the energy peak. But it's kind of the same thing.

MS. DAVIS: And, Mary Ann, this is Martha. I think that, to be blunt, I don't think a lot of those in the agencies have talked about the irrigation as a peaking factor. So --

MS. DICKINSON: I talk about it every talk I give.

MS. DAVIS: Well, obviously I haven't seen you enough.

MS. DICKINSON: Yeah, I know. We're really trying to get them to do more landscape

conservation, and I throw up the distribution curve of the consumption showing the summer peak, and showing how landscape could be reduced.

And --

MS. DAVIS: But there's a reason why I'm so intrigued with this is I'm working on a proposals with Eastern to put together a rebate for retrofit of irrigation systems, to try to get at that efficiency issue.

MS. DICKINSON: Um-hum.

MS. DAVIS: And this might be an interesting candidate for trying to match it up with some funding from the PUC because of the peak energy issue.

MS. DICKINSON: And Eastern actually has done a lot of work on the water budget. So they're a good candidate for a lot of reasons.

MR. TRASK: I'm sorry, Martha, could you repeat that last idea? I didn't get it on here on the screen.

MS. DAVIS: Oh, I'm sorry, I'm not paying attention to my screen here. The idea would be to, from the water side, trying to crack the nut of improving the efficiency of the irrigation systems. To have a rebate program

specifically for residential customers who are upgrading the actual hardware of their irrigation system.

It would be similar to what Nevada has done in a cash-for-grass program. Only it's a rebate for the irrigation hardware.

What I'm intrigued by is in the high efficiency clothes washer or with a spray head nozzle, maybe that's a better example, that spray head nozzle for restaurants is actually being paid for, the rebate is being paid for by a combination of water agency funds and PUC funds.

If in the landscape arena there is -- we can demonstrate the peak energy reduction value of retrofitting the landscaping irrigation systems that might be a nice candidate for a combined energy/water rebate.

MR. KLEIN: Matt, I want you to, if you would, please, make another heading, combined water/energy rebates. I think that -- combined water/energy programs I think is something we ought to be looking at.

MR. MASSERA: Matt, this is Paul Massera. I just wanted to offer -- well, I apologize I didn't have the opportunity to

complete this pre-work. We went through a similar exercise the water plan update process with Mary Ann and 60-some other stakeholders for the whole gamut of water management strategies, anyway. We have a couple dozen in the water plan.

We even went so far as to identify some of the nexus between energy and water in a qualitative way. And that publication, the public review draft will be coming out in a couple weeks. And I think that would do a lot of justice to your process, not unfortunately today, but in a couple weeks I can offer that up to you.

MR. TRASK: Sure.

MR. KLEIN: And that's for the system stuff, right? Not necessarily end use, it's mostly the system.

MS. DICKINSON: No, it's both.

MR. MASSERA: It's end use in the sense of what we're talking about today, the urban and agricultural water use efficiency measures.

And then it also has kind of a statewide strategies, as well.

MS. DICKINSON: Perhaps you could present that at the April 8th workshop. Will it be out by then?

MR. MASSERA: It will not. I can talk to our program manager and see what the status is.

MR. KLEIN: Soon is good.

MR. CROOKS: This is Tom Crooks with Navigant Consulting. I would ask the question why the combined energy and water approach as with the high efficiency spray nozzles, the clothes washers isn't done comprehensively for every measure.

MS. DICKINSON: Actually, that ties into what I was going to suggest was that standards be developed, water/energy standards for all products.

DR. NEWMARK: Actually I was going to bring the whole idea of this construction, the combined water/energy program and planning activity when you look at constructing. Gary's comments about structure plumbing, shorter either on-demand water heat at point of use, or shorter lines which also means less piping in the building.

Basically look at an entire building. Look at the water and energy tradeoffs as a system and decide what the standards ought to be. Because in each case there will be tradeoffs. So rather than do it by product, look at the unit the

same way we look at irrigation systems now.

MS. DICKINSON: You can do it both ways, actually.

DR. NEWMARK: Yeah. Now that takes a lot of, you know, and then the incentive, of course, is in new construction and codes and things like that.

So this idea of taking both water and energy into effect when we look at any standard, I think, is a really good idea. But certainly for buildings.

MS. DICKINSON: I think there's some, like commercial dishwashers, where the water and energy savings don't involve a tradeoff, and we could easily set product standards.

Water labeling, we could add that to the list. Labeling for water as well as labeling for energy.

MR. TRASK: Like a GreenStar program or --

MS. DICKINSON: Like a GreenStar or WaterStar or something like that. But, a label that doesn't just convey energy, but conveys others, as well.

It's very controversial, it seems, in

the energy world.

MR. TRASK: GreenStar --

MS. DICKINSON: No, just anything that looks like it's competing with EnergyStar.

MR. TRASK: That's what I meant.

MR. QUALLEY: This is George Qualley. Kind of another angle on this, and maybe this isn't the right place for it, but that would be time-of-use pricing for residential end users. Obviously would require a lot of different type of metering that's in place now. But I think that would really get people's attention in the pocketbook for especially in the peaking area.

MR. TRASK: And you're talking about water pricing, I assume is --

MR. QUALLEY: What's that?

MR. TRASK: I assume you're talking about water pricing rather than energy.

MR. QUALLEY: Well, actually I was thinking of energy pricing, but they, you know, tie together.

MR. KLEIN: I'd like to add one on combined metering; it was mentioned briefly earlier. With some of the technology I've seen with the ET controllers, they've got the ability

to read wirelessly any sensor in their neighborhood. So why not have a sensor picking up natural gas, picking up water, picking up electric all at the same time and feeding it to the appropriate folks who need it for utility billing. And save everybody that dollar a unit running around picking up meter data, you know.

DR. NEWMARK: Gary, this is Robin. Along that lines one of the things that Liz and I put together was the fact that last meeting you identified a whole list of information gaps, particularly with respect to energy.

And I wrote some of the ones from the notes. I wasn't there, you know. Energy used per capita and household; energy use in primary extraction; energy use in distribution end use, blah, blah, blah.

And the idea of having monitoring programs, as you said, that provides -- allow us to gather that information. And then do some assessments in each of these industries, I think would be very useful.

So it's not just the -- you know, the hardware facilitates the understanding that we really need to be able to design better programs.

MS. LEWIS: That's a good point because it helps tremendously in marketing all these other ideas, to have that hard data information behind it.

MR. TRASK: And we go after things like bounce-back like we had -- last meeting we had somebody talking about how great it was to go to on-demand water heaters. But since they had an undersized water heater to begin with, now all of a sudden they had all the hot water they could ever want, and all the kids were taking much longer showers. So they had a higher energy bill.

DR. NEWMARK: I think that a number of things --

UNIDENTIFIED SPEAKER: That's when we need coin-operated machines.

(Laughter.)

DR. NEWMARK: That's right. Go to your local state beach. If you look at some of these you actually get benefit in terms of public understanding. One of the big issues with respect to water is that people think they get it for free, and they don't have an understanding of the value of water.

By having such monitoring programs and

the water labeling, again increases public awareness. And I think there's a tremendous benefit to that.

MR. TRASK: That's a criteria that I had not considered in trying to rate these programs of what's best and what isn't.

DR. NEWMARK: It's intangible benefit, perhaps.

MR. TRASK: Kind of hard to quantify it, but it's worth discussing.

MS. LEWIS: Do other people have some top strategies they brought with them?

MR. KLEIN: Ricardo, now you get to say your strategy for urban ag.

MR. AMON: Well, as it turns out there is pump testing being provided, so it was okay to say it before. There are opportunities to improve matching the pump motor, albeit pump driven by diesel engines which is obviously out there, also, to the irrigation system. And so it would be more of a system, a whole system analysis. Motor, pump, irrigation system.

DR. HOUSE: Let me interject here, I want to highlight the pump testing. In the old days the utilities used to provide this service.

But when deregulation hit they quit providing the service.

And now they're back into doing something, but they're only doing it for agriculture pumps. And there's a guy that I've invited to speak at the April 8th meeting that runs the agricultural pumping testing.

The problem is they don't do it for any of the urban pumps. It's only for agricultural pumps. And so we've floated this before the Public Utilities Commission and we didn't get any response to it.

But it becomes an issue because the water agencies, you use pump testing, if you can do it on an annual basis, to determine a bunch of things. But you use it to determine when you're starting to run into inefficiencies in your pump; when the impellers need to be replaced; when the motor needs to be replaced and things like that.

And one of the things that we're finding in a lot of the system analyses that we do is we'll go in and we'll say, okay, for all your pumps give us the pump curves, which are standard. And when's your last pump test. And they say, well, the last pump test was like ten years ago.

And so they don't -- the pump testing is very valuable because it highlights on an annual basis when the water agency needs to look at that pump and change it, or needs to replace the impellers or do something like that. And it's not being done or offered by the utilities to any of the urban pumps, it's only to the ag pumps.

So, who fills that gap is a problem because it is the pump manufacturers that will come out and do the pump test. And so the water agencies are somewhat suspicious of a pump manufacturer that's coming out and doing a pump test and telling them that they need to replace that pump.

So one of the things that I would recommend that would be very valuable is if we could reinstitute annual pump tests for all water pumping pumps in the state. That would have tremendous benefits. Because almost every urban agency that we go into that hasn't had a pump test in say four or five years, there's some pumps that have really degraded in their operation. And the operators don't really know that. I mean they just -- because they're pumping a given volume of water, and they don't see the electricity bill.

And, you know, the electricity bill is going up, but the accountants or the financial people that see the electricity bill don't realize that they're not pumping a whole bunch more water with that.

And so there isn't, unless the agency's really on top of this they don't realize necessarily when these pumps start to degrade, unless they start heating up or start having other failures and things like that.

So one of the things that would be -- again, one of the things that would be really valuable to have would be annual pump testing for all water pumps in the state like we used to have, you know, 15 years ago.

MR. AMON: Along with that --

MR. TRASK: By the utilities.

MR. KLEIN: By which utilities?

DR. HOUSE: By someone that is not necessarily associated with a pump manufacturer or installer. It could be the utilities.

MR. AMON: It could be an expansion of an existing program. Right now Southern California -- on the pump test program, Lon, what you're saying is that there's a need to request

the PUC to allow the existing programs to attend to the water agency pumps, as well as industrial pumps.

And so the program is only, if you have an agricultural rate then you qualify, your pump, to be tested. And we have talked about this as an issue that needs to be addressed.

They will find out that their pumps are degrading because they're going to take longer time to get the amount of water that they needed. Because that pump is not producing as much water.

So, do you find that to be the case? I mean, are the operators -- is that --

MS. LEWIS: Too much --

MR. AMON: She's really keep me short.

UNIDENTIFIED SPEAKER: You're sitting too close, Ricardo.

(Laughter.)

MR. TRASK: Yeah, stop kicking him, will you?

MR. AMON: -- back to you.

(Laughter.)

MS. LEWIS: I want to make sure that --

MR. AMON: I'll go over there next time.

MS. LEWIS: I'll find you, Ricardo.

I want to make sure that we get our list complete before we start asking some detailed question, because at about quarter to 12 I'd like to move on to our next topic.

So proposed strategies.

MR. ROGGENSACK: But at our AWWARF conference we had discussed the concept of decentralizing water and wastewater treatment. The point of entry water in wastewater treatment at new developments. They could build a recycling plant on a new urban residential development. That would be an R&D item.

MS. LEWIS: Okay.

MR. KLEIN: And with that, wastewater reuse.

MR. WOLFF: This is Gary Wolff. I'd like to add an item. This comes off of the earlier item about combined metering, that I think is a great idea. There's, you know, many millions of dollars that could be saved by combining metering between water or gas and electric.

But if you were to do that, especially if it were done remotely, the next logical step is combined billing. You know, people get separate bills for these things and people don't know what

their total spending is on resources, nor do they know that their resource spending is, you know, one type of spending affects another type of spending.

You look at businesses, I've seen over and over again here in Alameda County because I was on our Alameda County Recycling Board, from a program with waste bills, the waste bill is smaller than the water bill, and the water bill is smaller than the energy bill. And the energy bills aren't even that big compared to labor. They're tiny compared to labor.

So, for business audits, unless you combine all these things together into dollars, and then show people, you know, you're spending 5 percent of your revenue on these things combined, and you know, a couple percentage point increase there would be significant in terms of profit, they don't even care.

You know, the fact that you can cut someone's garbage bill in half or cut someone's water bill in half is tiny compared to what they're dealing with with labor costs.

So consolidated billing opens up a door to being able to have enough of a price signal to

really talk to people in a meaningful way.

MS. LEWIS: Okay, thank you.

MR. KLEIN: Go ahead, Mary Ann.

MR. TRASK: Maybe I can tell a little story there. My first, I guess second assignment in my career as a consultant was working for Confederated Department Stores, Macys and a bunch of other ones. They wanted one bill for all of their stores for all of their utilities, electric, gas, water, telecommunications.

And I did my best and came back and said, can't be done. At that time, that was about 15 years ago. But I don't know if there's been much --

MR. KLEIN: It may have nothing to do with technology, by the way.

MS. LEWIS: Mary Ann.

MS. DICKINSON: I think I still would like to add one more to the list, and I'd like to add market transformation for super high efficiency products and standard setting for those products. I think the standard setting is still missing from the list. That was one of my top three that I brought to the meeting.

MS. LEWIS: When you say market

transformation, do you want to expound on that?

MS. DICKINSON: Not having -- making sure that these high efficiency products are not just a specialty, really expensive fringe product, but encouraging to be more mainstream. And that's what I mean by market transformation. Making sure that they're really truly available to the consumer.

And I think EnergyStar has actually done a really good job of that. I think it's something we can imitate.

MS. LEWIS: Thank you.

MR. CROOKS: This is Tom Crooks with Navigant. I'm going to have to be leaving you all. I wanted to get this in before you get off this area.

As many of you know the electric utilities are currently in the process of doing planning for 2006 to 2008, and coming to the end of the $800 million for 2004/2005 EE expenditures.

And they're evaluating in a rank order basis various measures, including what measures that affect water. And their TRCs, their total resource cost ratios are artificially low because they're missing the constituent parts of the cost

from the five-step water system.

And so they're not going to get the priority and the attention in the programmatic offerings for the next three years that they should because of the low cost effectiveness.

And I just want to put a placeholder in here that says this is a major issue; it's current right now. And there needs to be an address at the strategy level.

MR. TRASK: Let me see if I understand that, Tom. Basically it's we're not comparing apples to apples, is that --

MR. KLEIN: I think --

MR. CROOKS: We're missing some of the costs that are being avoided when we're evaluating the value -- when we're assessing the value of selective measures. For water, for example, they're not including the cost of, you know, the other five elements, or the five water elements of conveyance, storage, distribution, et cetera.

Those aren't included -- except for minor individual cases those elements are not included in the cost effectiveness.

So low-flow showerheads, faucet aerators are low cost effective measures which are going to

the bottom of the barrel and not going to be, you know, pushed as hard and used as part of their portfolio moving forward.

And without this combined cost in here, there's costs that are being missed, and the measures are not being evaluated at their true value.

MS. DICKINSON: You need full cost accounting, really, don't you?

MR. CROOKS: That's what I mean.

MS. DICKINSON: Yeah.

MR. KLEIN: So, Matt, you need to have the words total resource cost tests for energy utility programs are not accounting for the water costs properly.

MR. CROOKS: All the water energy for the five steps.

MR. KLEIN: Right. Even the energy associated with the water movement, as well. Right.

MR. CROOKS: Right, that's the key where I'm looking at right now.

MR. KLEIN: Okay, so is there some place that we, as a group, should think about doing something like immediately?

MR. CROOKS: I think there is. And I'd like to -- if there can be a splinter group there's current need right now where the utilities and the PUC need to have access to this -- visibility currently, because the proposals are going to be going into the program and it's going to have a large impact.

MR. KLEIN: Okay.

MS. LEWIS: Well, we're doing what is essentially avoided cost analysis on the water side. And Jim is working with us on that, as well as, you know, a consultant, Tom Chessnutt, whom I think you've all heard from.

And so we'll have work on that by the end of the year, which will be a full cost accounting on the water side, including environmental benefits. So, I think that's hopefully something we can bring to the table.

MR. KLEIN: I think that Tom's got a point that we actually need to do something like this month.

There's some work going on in the energy side where we're modifying the proposals -- we're evaluating current projects and looking at possible new ones, right, Tom?

MR. CROOKS: Right.

MR. KLEIN: And so if that's true then we're in trouble, because if we don't get the method added to now, the programs won't get done by those utilities for the next three years, two years, whatever the number is.

So, Monica, who's working on that here, do you know? Or anybody?

MS. LEWIS: Sylvia Bender.

MR. KLEIN: Sylvia was working on it? Okay.

MR. TRASK: Maybe I'm not quite clear on the concept here. Are we looking --

MR. WOLFF: This is Gary Wolff. I'd like to comment, it might help to clarify it, Matt.

There's a full-cost accounting as certainly part of what's needed to understand who these benefits accrue to in the bigger picture. But we also have a problem where the utilities look at things from sort of their perspective. And yet quite often in these problems that we're struggling with, the way you need to look at it is ultimately what gives the customer the lowest cost. This is related to the combined billing

comment earlier.

So, you know, an energy utility may say, you know, here's a way we could save our customers money, but it would actually involve raising energy rates. How is that possible? Well, people are going to save on their water bill even more than the increase in energy rates.

Well, that's not going to happen from an electric utility or, you know, a gas utility unless somehow the regulatory structure directs them to look at a total resource cost perspective for their customers, and that's the determining perspective.

MR. CROOKS: I agree with that, but I have to correct that. I'm really focused on the societal value. The total resource cost, avoided cost from a societal standpoint. Not a participant cost end-user standpoint.

So we're talking about, you know, capturing all of the costs for society from both water and energy before we move forward and implement measures, or don't implement measures. So it's a societal value, a total resource cost accounting.

MR. WOLFF: Well, we're getting into a

detailed discussion probably not planned for today. But I think you and I could converge pretty easily.

But the key point is that looking at it from the narrowly defined utility perspective will give you the wrong answer.

MR. CROOKS: Correct.

MR. WOLFF: And so you have to have, you know, you have to have a requirement to look at it from some other perspective. I think the societal perspective is too vague and difficult to do while the customer perspective is more understandable.

But that's a nuance that we have to get into in some other conversation.

MS. LEWIS: Okay, thank you.

MS. PARK: This is Laurie Park. Can you hear me?

MR. TRASK: Yeah, Tom, we're getting a lot of noise on your phone there.

MS. PARK: This is Laurie Park with Navigant Consulting. And I just wanted to add that the work that Tom is referring to, we're working with Martha Davis at IE -- on a pilot for the CPUC to come up with a proxy for how you might approach combining the total resource cost of the

energy and water resource.

And what we're going to be doing, because there isn't, you know, as Tom emphasized, there isn't enough time to do a complete job in time to really weigh in in CPUC's process.

So what Tom is working on, with Martha, and, you know, I think what Tom is saying is he would like to invite others to participate in this process with him, is to come up with this high level proxy to rely upon, you know, ballpark estimates of certain kinds of costs.

And I've been reviewing the data that I've seen presented in, you know, other portions of this group, and it seems to me that there's already a lot of information that is understood. And you can sort of take estimates about what the source of water is, and what the approximate conveyance is, et cetera. And come up with something that is an average, or at least a reasonable proxy.

If you look at what the PUC is using for the TRC --

MS. LEWIS: Wait --

MS. PARK: -- for electric, -- I'm sorry, you want to keep me on process.

MS. LEWIS: Yeah.

MS. PARK: I just wanted to say that before we lose Tom, because I think it is a really hot issue, and a very important deliverable that this group could really have an impact on.

MR. TRASK: Yeah, it's something that I'm very interested in, and I think I understand the concept now. But perhaps I could ask Tom and maybe Gary and Laurie, if you could maybe just write up an example of how it was done well and how it was not done well. I think that --

MR. KLEIN: I'm wondering if we want to invite them to present something on this at the next workshop.

MR. TRASK: Sure.

MR. KLEIN: It would be very very valuable. The timing on the 8th is still okay, I think, in the scheme of this. And I think we ought to raise it in front of our Commissioners. I think it would be a very valuable thing to do.

MR. TRASK: Anything that gets to utility, you know, electric utility planning, definitely our Commissioners will want to hear about.

MS. LEWIS: I agree, this is an

important issue and we've got a perfect channel right in front of us.

Okay, additional proposed --

MR. CROOKS: Thank you very much.

MS. LEWIS: Thank you very much.

MR. TRASK: Thank you, Tom.

MR. CROOKS: Right.

DR. BURTON: There was one additional thing that we talked about last time was the energy cost of suburban sprawl which requires that the water distribution system also sprawl. And I guess we could propose something like land use planning incentives where that cost is --

MR. TRASK: Kind of gets out of the end use, but --

DR. BURTON: -- considered. Yeah, but we're kind of getting on that topic a little bit anyway with decentralizing water and wastewater treatment as kind of along that topic, as well. So I don't know if you want to include it here or later, but --

MS. LEWIS: Well, we're going to segue real quickly.

DR. McMAHON: I have one more.

MS. LEWIS: Sure.

DR. McMAHON: I don't know exactly how to describe this. It's touched upon by the time-of-use metering and the water-based irrigation controllers and that.

I'm influenced by having just met the inventor of SmartDust. We're at the very early stages of having feedback systems at very small scales that could, you could spread them across a field and it would tell you, and feedback to the irrigation system which spots to water, and which spots not to water.

It's coming technology; it's going to come very quickly. I don't know exactly how to put it on the list, but it's something that I think we should be aware of.

MR. TRASK: I think it's called SmartIrrigation --

DR. McMAHON: Feedback technology, yeah. But it's not even just irrigation; it has to do with the metering; it has to do with all kinds of things.

MR. TRASK: Actually I have an uncle that works on this stuff.

MR. KLEIN: How many people have an idea they want to raise?

MR. TRASK: Go, Lon.

DR. HOUSE: Actually I'm only going to talk about peak. And I have six measures, okay.

First is storage utilization for energy as opposed to only for water. Second is acceleration of storage additions for energy, peak reductions. Third is peaking efficiency. We can talk about these later.

Fourth is change in water deliveries. And water deliveries now are on a 24-hour basis. And so if you order water from you guys, you order 500 acrefeet of water, you have to take that 500 acrefeet of water over the next 24 hours. That means you've got to run your pumps during the peak period.

And irrigation is also on a 24-hour basis. And there are ways -- we've talked with the Bureau about pulsing the Friant-Kern Canal. And it didn't -- we ran into some problems. But the problem is that if you order water it's on a 24-hour basis and you have to pump, out of the canals or wherever it is, all 24 hours. Because if you don't you get in all sorts of trouble because the guys downstream start flooding.

The fifth we've talked about is water

TOU meters and water TOU tariffs. And the sixth is the use of natural gas engines for pumping, and for peak pumping. And I'll talk about that this afternoon because San Diego Gas and Electric has a program that we're just now starting on to do precisely that.

MR. KLEIN: I have one more.

MS. LEWIS: Okay.

MR. KLEIN: Prepay meters. You prepay your gasoline; you postpay everything else. You can never tell when that bill's going to come and how big it's going to be. If you prepay you actually know what you're going to buy.

MR. TRASK: The very first apartment that I actually lived in on my own was in Scotland and I had to make sure I had ten p pieces around if I wanted heat in the morning, because I had a little coin box on the wall.

MR. KLEIN: There's a system with credit-card like technology and the same kind of stuff you use for SIM cards and phones overseas. Even here you can buy prepaid cards for phone, plug them in and they work. The concept is there and we might want to think about it.

DR. HOUSE: Just an editorial comment.

(Laughter.)

MR. KLEIN: It's good for a laugh.

DR. HOUSE: A lot in the Central Valley in particular you don't pay for water. You pay for a connection. And, you know, the whole genesis behind some of the federal bureau water is you've got to be metered.

And Sacramento is one of the worst ones. You pay a flat rate per month no matter how much water you use because we don't know how much water you use.

So we have a long way to go in the water industry to get to paying for certain volumes of water. But that's just an editorial comment.

MS. DICKINSON: Well, that's where we need to go. Volumetric billing for everybody including ag.

MR. WOLFF: Well, and there's another editorial comment that's worth making, then, too. Which is that, you know, the water industry is the most capital intensive of all the utilities. Way more so than electricity or natural gas or telecom.

And as a result, volumetric charging, you know, if you really charge people just the

variable cost of water delivery, the narrowly defined variable cost, they're not all that high. You're not going to encourage near as much conservation as I think most of us would like.

So that leads back to the total resource accounting perspective earlier. You really need to link it to other things in order to get the dollars up high enough to get anyone to really care or pay attention.

MS. LEWIS: Are there other proposed --

MR. KLEIN: I think 24 is probably enough.

DR. HOUSE: Let me add one more. It's not really a peaking issue, but -- and it has to do with water tariff design, because the last speaker brought that up. And the tariff design in water agencies, in the water industry, is virtually identical to what you do in the electric industry.

The difference, as the last speaker said, is it's almost all capital. And so what you've got in the electric industries, you've got, in a lot of cases, you've got a big demand charge associated with your capital. You don't have that in the water industry. It's all volumetric.

So you've got to take all these fixed costs and spread them over certain volumes. And I don't want this group or this organization to even venture into water agency tariff design. But it is an issue and you can get responses from the agencies.

I mean it's very well known that depending upon how your rates are set you can get, on a commodity you can get responses from your customers.

MR. TRASK: That's an interesting question, Lon. I think, you know, one of the -- or interesting comment. One of the criticisms, I guess, that we hear a lot is that water agencies don't care all that much about energy because they just pass through the costs to their customers. Is that changing? Is that a philosophy that's --

DR. HOUSE: Well, that is -- I think that still is true, however an interesting observation was when, you know, San Diego Gas and Electric, they paid off their CTC charges. And they were completely exposed to the market when we had the problems in 2000 and 2001.

Well, what happened in a lot of the industries, a lot of the water agencies down

there, is the price they paid for electricity was changing so rapidly that they, you know, they've got a long process to go through a rate design change, just like, well, like the electric utilities were supposed to have. But until we ran into this critical peak pricing forced march, which is another discussion.

MR. TRASK: Another editorial comment.

DR. HOUSE: Yeah, another editorial comment. But what they did in a lot of instances is they just put a electric surcharge. So you'd have your base rate, and then you would have an electric surcharge.

And you're running into some of those industries, those water agencies down there, some of those avocado growers, they're paying $1200 an acrefoot, you know. And you've got $300 or $400 an acrefoot water is electricity charge.

But the answer is that it depends upon the rate design. Some of them have, at least in the San Diego area, had an electricity surcharge that is just modified during -- it doesn't have to go through a whole rate review and everything like that.

But the --

MR. TRASK: And that's on bills that are not volumetric.

DR. HOUSE: Those are volumetric, yeah.

MR. TRASK: Oh, okay.

DR. HOUSE: Yeah, and --

MR. TRASK: Would they be based per gallon or --

DR. HOUSE: Yeah, it's based upon how much water is delivered because that's a fairly urban area, and it is pressurized water, and it is very high value crops. It's cut flowers and avocados and things like that. So, I mean, you know, you're not going to pay $1200 an acrefoot to grow alfalfa, so.

But the energy costs are generally just taken -- with that particular exception -- are just taken as an input. They're just like, sort of like the cost of fuel for the electric utilities, you know. It's just flowed right through. And whatever that change is it just gets -- it goes through. And that will work so long as you have fairly stable electricity rates.

Now, one of the things that the water industry is getting very excited about in a negative way is the potential for critical peak

pricing, mandatory tariffs in June of this year, which looks like it's going to happen. And which we've noticed them all.

And the problem that they have is, I mean you think about your electric utility, your water utility is exactly the same way, an immediate change in their cost of service is not necessarily reflected in immediate change in their rates.

And so they are really concerned about the potential for, you know, doubling or tripling of their electric bills this summer without having a catch and to flow that through directly to their customers.

So what they generally do is they have big reserves, because these are very capital-intensive industries. And they will borrow from the reserves to pay until they get a new rate change in effect, and then they'll pay the reserves back.

MS. LEWIS: Okay.

MR. TRASK: My system here just reminded me that they're going to reboot at noon, so those of you that are monitoring on the web I think your screen is going to go away for awhile at noon.

MR. KLEIN: We should shut down in advance of that, I think.

MS. DICKINSON: Yeah, I have one more to add. Okay. And that's water offsets, which is not transfers between water agencies or ag agencies to urban agencies, it's trading of water at the end user level.

And while that isn't happening now, it is almost certain to happen within the next five years because of the legislation that's been passed requiring development to prove that water is there.

So, we've already seen situations where a developer retrofits in one place and then uses that water to apply as a credit for development in another place.

And that's going on all over the central coast right now. In fact, there are ordinances that actually specify this.

MR. TRASK: Right, I brought that up before the meeting, Mary Ann, before you got here. I had just found out, I think it's mostly in the L.A. area, where in a lot of municipalities if you want to build a subdivision you have to first go out and find the water, whether it's through

conservation or whatever, another source. And then usually beyond what you're planning to take.

MS. DICKINSON: Yeah, if you look at the ordinances in the central coast, it's more than a two-for-one ratio. East Bay MUD has a two-for-one ratio when they're giving will-serve letters for development. And now it's becoming a growing trend. I'm actually kind of alarmed about it because there's no oversight over what the amount of the conservation is and whether it's even within utility systems. And the water agencies all believe that that conserved water is there.

So it's kind of a worrisome area, but it's definitely something that belongs on the list.

MR. TRASK: That's where we had up here essentially verification to a monitoring system so that we can verify these kind of --

MS. DICKINSON: But this is marketplace movement of water that's outside of the realm of the utility water agency, itself. So, it's like in the air offset tradings, very analogous.

MR. KLEIN: So you're actually concerned, not that they're doing it, but that it's not really traceable and trackable? That's

one of your concerns?

MS. DICKINSON: One of my concerns is that we don't have any standards for it, or any experience with it. And we're certainly not looking at the air side to learn any lessons. It's just kind of randomly happening.

MR. KLEIN: Okay.

MS. DICKINSON: It's something that needs to be looked at.

DR. HOUSE: Well, I would expand that to the utility side, too, the water utility side. And, you know, we've talked about, but one, a perfect example is Southern Nevada Water Agency that has approached MET and said, we will pay for a substantial portion of one of your desal facilities if you will let us take your allocation out of the Colorado River.

MS. DICKINSON: Yeah.

DR. NEWMARK: This is getting towards the conveyance discussion, too. Because we have some ideas with respect to local and regional planning that actually limits the amount of physical water moved from place to place.

And it really is a political and a regulatory and legal issue, because it's this

question of, you know, community A purchases water from a distant location. Community B next door does not. Can we get them to -- incentivize them to not have to export so much water.

So I think it's going to be a tie-in directly to the discussion this afternoon.

MS. LEWIS: Okay. Is there anything else you want to add to this list before we break for lunch? And I want to say a few things about this afternoon.

MR. KLEIN: Matt can't, he's got to shut down.

MR. TRASK: No, actually I'm on my local C drive here, so I think we're all right.

MR. KLEIN: Oh, good.

MS. LEWIS: Anything else you want to add to this list?

Now, we also want to talk about the other water stages, conveyance and so forth. And we'll do that as soon as we take up at 1:00. And we're going to do it -- we're going to have to do that in a more compressed way than we did this morning.

And then we'll talk about ranking some of these so we can have a form of --

MR. TRASK: Or at least establishing the criteria by which we would rank.

MS. LEWIS: Right, right. We'll have to talk at lunch about how much we can accomplish this afternoon. But, I think --

MR. KLEIN: I think we need to have a 1:15 return, because now we're at peak lunchtime.

MS. LEWIS: Okay.

MS. DICKINSON: Peak, everything's about peak.

MS. LEWIS: Okay.

MR. TRASK: Yeah, we need to do some peak lunch reduction.

MS. LEWIS: We'll see you at 1:15. Thank you.

(Whereupon, at 12:01 p.m., the meeting was adjourned, to reconvene at 1:15 p.m., this same day.)

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AFTERNOON SESSION

1:21 p.m.

MS. LEWIS: We're going to get started again. Okay, all the important people are here, right? Okay.

MR. KLEIN: We're all here.

MS. LEWIS: I know, this is the hard part.

MS. PARK: Excuse me, Kae. Before you start on the next sector or segment, what wasn't clear to me from the beginning part was we talked a lot about end use opportunities. And, of course, if you get into the individual industry sectors, I mean there could be a lot more measures than what we considered. What process are you going through to try to capture those?

MS. LEWIS: Do you mean -- do you want to --

MR. TRASK: Yeah, basically we've kind of divided today just on either side of the customer meter. So this morning was mostly end use on the customer side of the meter. Today is the other side, so.

MR. KLEIN: But, Laura, you're discussing the other parts of the customer side of

the meter, so the answer, in part, is that Bob Wilkinson and Gary Wolff are trying to catalogue that kind of stuff. And you should be looking at what they're going to present on the 8th. And then saying, oh, you've missed some things, or, oh, I didn't know about those things, because they've really been trying hard to look at that.

And I know there are lots of folks -- Shahid is working on a project, Mike works on projects where we're doing stuff with -- Ricardo, on various end use sectors. And so we know we don't know them all, but we know that there are opportunities that are similar to some of the things that are here.

So you should coordinate with them and think about those things and make sure it gets fed in.

I don't think you were here last time, but one of the things we learned in our last meeting was that the area that we sort of know the least about is at the end user side of the meter from a water perspective. The energy related to the water, and the water related to the energy in those facilities, whether residential, commercial, industrial, doesn't matter. We just don't know a

lot.

And yet it's what, over half of the total is there. So it's a big number, we know it's a big number, we don't need to work on it. But it's the customer side, the thing you were raising, right?

MS. PARK: Yes.

MR. KLEIN: There's lots of subsectors.

MS. PARK: I was thinking, for example, we didn't talk about food processing; we didn't talk about the mining. You know, there are some really heavy water users out there that we did not specifically discuss.

MS. DICKINSON: We might want to put a placeholder to address your concerns, placeholder number that says process, industrial process changes and improvements. Because you're right, there are a lot of -- Silicon Valley has made an enormous number of them to go from, you know, wet technologies to dry. So, yes.

MR. KLEIN: So I want to know how you managed to get it to work right and we couldn't do that yesterday.

(Laughter.)

MR. KLEIN: We couldn't get the lighting

right.

MR. TRASK: You just got to hold your mouth right.

MR. KLEIN: Okay.

MR. TRASK: That's all you do.

MR. KLEIN: Drink water, drink water.

MS. LEWIS: Okay, so what we're going to do this afternoon is Matt and I changed our agenda a little bit, so I've already taken license with it this morning, so we took more license with it this afternoon, to shorten it.

And what we're going to do is we're going to go through a similar exercise that we did this morning for the other water stages, and that will include conveyance, treatment, distribution.

And then when we're finished with that -- we'll do that just the way we did it this morning -- then we're going to address these four questions that I've written up here. And that will really get to the heart of the things that Matt needs to know about the strategies that we're talking about this morning. And so we'll talk a little bit more about that.

MR. KLEIN: So we're also talking about wastewater treatment now.

MS. LEWIS: Yes.

MR. KLEIN: It's all -- it's everything outside the end user.

MS. LEWIS: Right. We've now gone beyond the customer side of the meter and we'll talk about strategies.

Now I realize we've had a little bit of that in this morning's discussion, but let's go ahead and start listing things. What we'll try to do is what we did this morning, and you guys did pretty well actually, to focus on getting a list. And then we'll have discussion on it. So we'll make sure that we get the list done.

And let's not take more than 45 minutes for this so we can move on to our questions and get out as soon as possible.

MR. KLEIN: Who wants to go home today?

MS. LEWIS: Okay.

MR. KLEIN: No one raised their hands.

MS. LEWIS: Okay. Matt is starting a list. He's getting started without us actually.

MR. TRASK: Oh, you guys here?

(Laughter.)

MR. TRASK: I took one that Lon had mentioned that seemed probably more appropriate

for this side of the meter. And then I just put my little pet idea that I threw out last week about increased storage.

This would be storage on the water agency side of the meter, which could be -- and generally, I'm also thinking of fresh water storage. So this is post-treatment storage.

MS. LEWIS: Is this a current strategy or --

MR. TRASK: That's probably a good question.

MR. KLEIN: Oops, no.

MS. PARK: I think it's highly variable by entity. If Martha is on the phone, you know, IEUA has been very active in looking for opportunities to increase retention time between transferred water so that they don't have to pump during onpeak.

Martha? Not yet.

MS. DICKINSON: I think we need to put the system water audit and leak detection and repair here, at least in its current form. And then there'll be another version in the future.

MR. CHAUDHRY: So now we are talking about energy conservation in water, wastewater.

It's other side of the story. Am I right, Kae?

MS. LEWIS: Right.

MR. CHAUDHRY: I think, you know, when we look at the overall water system I see three biggest energy consuming segments or groups, you may say, electric motor systems. Process, itself, and I would describe in detail, you know, what I mean. And probably from California's perspective conveyance is a big issue where 90 percent of the energy is used in water transportation.

Detailing a little bit more of these three groups I think, you know, there are ample opportunities in water facilities particularly in the areas of load shifting and even, though as said earlier, that may not reduce consumption but that will -- costs.

MR. TRASK: Again, we're looking at existing systems here. We'll go into --

MR. KLEIN: The questions -- we're looking at existing strategies that somebody's implementing to do something to make it better, is that right?

MR. TRASK: Right.

MR. CHAUDHRY: Right.

MR. KLEIN: So are there programs that

you're aware of that are operating to work with municipal water utilities to change their energy efficiency? Do we have any of those?

MR. CHAUDHRY: Yeah. Right, there are, there are quite a few who are implementing these -- - either they have implemented or they are implementing or they are in the planning process of doing so.

The next level is replacing your existing pumps and motors with VFDs and high efficiency motors and pumps. Process optimization and process automation (indiscernible). In wastewater treatment facilities I'm talking about process optimization again and equipment modification.

MR. KLEIN: Process optimization, is that what --

MR. CHAUDHRY: Optimization, yes.

MR. TRASK: Optimization.

MR. KLEIN: And what did you say --

MR. CHAUDHRY: Process automation.

MR. KLEIN: Both.

MR. CHAUDHRY: Both.

MR. KLEIN: And that's for both water supply --

MR. CHAUDHRY: Both --

MR. KLEIN: -- and wastewater treatment.

MR. CHAUDHRY: -- water treatment and wastewater treatment. And in certain cases for water supply, as well, because in many rural and small districts they don't have any automatic control of their pumps and water, so the net result is that when they start using their system to divert water to the storage tanks they keep on running unless somebody goes there personally and see, you know, if this is overflowing and then turn it off.

So there are quite a few cases that while using their system a process of automation they were able to save significant amount of energy.

Now, I can group all these different activities into a couple of more. Efficiency is another one, which focus on increasing equipment and process efficiency.

Generation or microgeneration, which uses digester gas, for example from wastewater treatment facilities. Small channel hydros, that's another available technology which is being tested right now.

But more the use of renewables. That's probably -- wind is being used for water pumping for decades now, but in recent applications PV is coming into water, wastewater field, as well.

And in California I'm aware of at least eight different wastewater treatment facilities which are using PV to power their system. And the capacity is almost, I think, 600 kilowatt in one case.

MR. TRASK: And, Shahid, when you say that is it only for the pumping, or would they also have --

MR. CHAUDHRY: No, no, they are treating wastewater basically. That's a wastewater treatment plant is being powered from --

MR. TRASK: So the whole plant?

MR. CHAUDHRY: Whole plant. And this is based on net metering basis where during the daytime they will supply their excess power back to the grid. And at nighttime they will get it from the grid.

Identify and develop additional water supplies. Identify and develop local water supplies. And there's a distinction between these two. Local water supply means desalinating your

local brackish water, ocean water in many cases, groundwater. And water recycling is another one which is also gaining momentum.

And the idea of recycling water is that we can treat this water to different levels based on the needs of the end users.

Oh, we also need to research new technologies which are especially in the current picture when water quality requirements are becoming more stringent. And there are a lot of emerging contaminants in the water, so the net result would be that will be use of new technologies which are inherently more energy intensive. So there is a need to research, develop and use of these new technologies.

I think these are, these are some of the things that I can think of, should be -- are needed in this side of the picture.

MR. TRASK: Well, certainly people are always trying to identify new water supplies. And people are always trying to develop their local water supplies. So that would certainly fall under current.

Is there a lot of research, and who's doing the research to improve treatment processes?

MR. CHAUDHRY: Well, these are as on-needed basis. There are many water districts doing this, indeed these efforts on an individual basis. For example, Metropolitan Water District of Southern California, from CEC's perspective. We have a $2 million contract with Metropolitan. And under Metropolitan there are about eight or nine different water agencies working on separate, yet integrated, projects.

And the ultimate idea is to come up with a water supply scheme which is cost effective and energy efficient. We are testing for different types of source waters (inaudible) wastewater, agricultural runoff and brackish water.

Working with Lawrence Berkeley National Laboratory to demonstrate a new technology to remove arsenic from groundwater. And if it's success will reduce the cost from $58 per family per year to less than $1 per family per year. That's a new technology Lawrence Berkeley Lab developed and we are pilot testing it right now.

MR. TRASK: Let me ask a quick question. Is there an equivalent of EPRI on the water side, the Electric Power Research Institute?

MS. DICKINSON: AWWARF.

MR. TRASK: AWAR?

MS. DICKINSON: Yeah, AWWARF, the American WaterWorks Association Research Foundation.

MR. CHAUDHRY: AWWARF is not very big on an energy/water relationship at this point of time, but they are getting in this area. Same is the case with WERF, Water Environment Research Foundation, which is researching of water environment. And then there is a Water Reuse Foundation. AWWARF deals with water; WERF deals with wastewater; and Water Reuse Foundation deals with water recycling.

And then in addition to these three, Alliance to Save Energy is also involved in this area.

Consortium for Energy Efficiency, they are embarking on water/energy issue in a big way. And (inaudible) is picking up momentum nationwide. ACEEE has some stakes in this field. They had a roadmap last year, and they came up with some ideas. The final report is not available yet.

But there are quite a few organizations working in bits and pieces. And probably there's also a need to coordinate their work, or at least,

you know, some kind of knowledge, what you can call it.

MR. TRASK: Clearinghouse or --

MR. CHAUDHRY: Clearinghouse, exactly. That can keep track of all these different activities. And I think no doubt be beneficial in the sense, first of all, there will be no duplication or replication. And second is we can use our research dollars more in a better way.

MS. LEWIS: Can we -- I'd like to get back to the current strategies. Do you have any more, Shahid?

MR. CHAUDHRY: I think that's the few which I could think of at least at this time, you know. Maybe as we go along we can come up with some more.

MS. LEWIS: Okay. Thanks. Other current strategies in the --

MR. KLEIN: I have a question for some of the other folks here at the CEC. I know we've been doing some projects to support wastewater, municipal water utilities and wastewater utilities, haven't we?

MR. CHAUDHRY: I'm sorry?

MR. KLEIN: We've had programs to work

with water and wastewater utilities to help them improve efficiency in their facilities, if I remember right. Is that right? Mike, do you --

MR. CHAUDHRY: Yeah, --

MR. HARTLEY: That's correct, yes.

MR. KLEIN: Could you talk about that for a minute?

MR. HARTLEY: We have programs going on where we basically provide up to $10,000 audit assistance. And then when the audit is complete and the customer knows what he needs to do we'll offer him a low interest loan to pay for it, you know, to pay for the design and the construction, whatever needs to be done.

MR. KLEIN: So this is energy audits for municipal facilities --

MR. HARTLEY: Yeah, water and wastewater facilities.

MR. KLEIN: So that's an existing program now.

MR. TRASK: Is there a cap on those funds, Mike?

MR. CHAUDHRY: Yeah, let me complement that. You know, we have two programs; in fact, at one point of time we used to have four programs,

but two are gone.

The remaining two programs are known as the energy partnership program. and under that program, as Michael mentioned, we can provide up to $10,000 to water/wastewater districts to come up with -- to identify any energy efficiency projects. And there's no limit. Anything basically a water district can think of that will reduce energy we will fund that.

And the list -- well, I can give you a few examples. For example, feasibility studies, comprehensive energy audits, review of energy projects proposals, identifying cost effective energy saving measures. The list goes on and on and on.

And this program is particularly beneficial for small districts where they don't have enough technical capabilities, but they want to do something and they cannot do just because they don't have enough funds or abilities.

Generally we provide these services inhouse. But if we don't have capabilities inhouse then we can extend or we can bring our technical consultants into the picture. And they will go to the facility and they will do this work

for us and for the district.

The second program is called energy financing program. And under this program we can provide up to 100 percent financing of the energy segment, energy-related side of the project. There's no match funding requirement for that. The limit is, I believe, $2.5 million per applicant.

The only condition is that there should be enough energy savings from the project that the applicant is able to pay back our loan within ten years at a simple rate. So, (inaudible) about 13 years. That is the only catch in there. And there are quite a few projects in progress right now.

MR. TRASK: Are you the contact person for that, those programs, Shahid?

MR. CHAUDHRY: Michael, yes, you can contact Mike. Or you can contact me. Virginia Lew is probably the best person to talk about it.

MR. TRASK: That information will be in our report, so you can probably count on a few phone calls.

MR. CHAUDHRY: Sounds good.

MS. DICKINSON: Can I just add ten

seconds?

MS. LEWIS: Yes.

MS. DICKINSON: There will also be creating -- sometime this year EPA will be creating a national water efficiency organization comparable to CEE, the Consortium for Energy Efficiency. It'll be a consortium for water efficiency. And it will do a lot of those same kinds of functions.

The water/energy work that CEE is currently starting in the commercial kitchens initiative is a precursor to a bigger program that will be rolled out. And I expect it's going to include research dollars, as well.

MS. LEWIS: Thank you. Are there other strategies that we want to list here, current?

MS. PARK: Yeah, I'd like to represent my colleague in his absence. Tom Crooks didn't explain to you when he got on the phone that he was, prior to joining Navigant, SCE's DSM program manager.

And what I've learned from him through our pilot with IEUA is that there's an amazing amount of flexibility in the utilities energy performance contracting capabilities that I really

didn't know.

And what he's doing right now for IEUA we could do for others, which is he's reviewing their entire portfolio of pending capital projects, and looking for how we might bid some modifications through the EPC program.

To give you an example one of the things I didn't realize that you could do is when you have a new pipeline going in or a pipeline being changed out, you might consider increasing the diameter of the pipe to reduce friction. And that if you can demonstrate, you know, through your engineering calcs that that actually saves energy, you can bid that into the EPC program.

By doing that you not only get, you know, a contribution to the cost of the pipeline, but you also then have additional capacity for growth.

We also looked at the possibility of bidding in some reservoirs or tanks for additional storage, that that is also something that you could bid into the EPC. There's actually a lot of flexibility. And, Gary, I might suggest that you might want to bring in the IOUs and have them think creatively about that and address the

Commission on the --

MR. TRASK: Laurie, what was the name of that program, again?

MS. PARK: It's the energy performance contracting, EPC contracts.

MR. KLEIN: You might ask Tom who he thinks might be good to bring in and talk about that.

MS. PARK: I will do that.

MR. KLEIN: Thank you.

MR. CHAUDHRY: Is it something like the savings by design offer by utilities?

MS. PARK: Yes, exactly, you know, like SCE has that new program out right now called IDEA.

MR. CHAUDHRY: Right.

MS. PARK: It's very comparable to that. It's like bring us an innovative idea. But what I didn't realize is that capability existed already in the --

MR. CHAUDHRY: Okay.

MS. PARK: -- roles.

MR. TRASK: So how -- does the end user have to know this exists, or is the utility out there trying to drum up participation in this?

MS. PARK: Well, that's an interesting circumstance. I mean, you know, I should let other people speak for that, but my understanding with IEUA is they tended to see their SCE contract rep once every six months. And it was typically, hi, how are you, how's everything going. As opposed to, gee, you know, what are you proactively doing to find all of these measures for potential participation in the programs.

I certainly think that could be done better.

DR. HOUSE: The problem that we've had in the past with these is this is -- Laurie's right, anything that you can come up with that you can go to the utility and you can say, we want to do this and this is how much it costs. The problem that we've had in the past is that it is very difficult to get the utility to approve what water changes, because it's all on energy basis.

So, for example, you go in and you ask them, say, we need to put in a new storage tank, another 5 million gallons. And that will save us some peaking energy. And the utility's response is almost universally been, well, you guys have to do that for your water supply anyway, so we're not

going to pay anything on an energy basis.

And so the real problem with this has been is getting the utility people that decide whether they're going to fund this or not to agree and recognize that water savings are related to energy savings. And agree the energy savings associated with the measures that you're proposing.

Because if you can get them to agree that the energy savings are correct, then it's all okay. But that agreement has been very difficult in getting the utilities to approve.

MS. LEWIS: Can we --

MR. TRASK: So meaning developing standards?

MS. LEWIS: No, I want to stop this right now because we want to talk about barriers, we want to do it later. So I want to keep this organized.

I want to transition to proposed strategies unless anyone's got some additional current strategies.

MS. PARK: I have one more that I wanted to bring to your attention, and that is operational strategies to do things like reduce

stormwater infiltration into the sewer system. That reduces then the quantity of water that you're treating.

MS. LEWIS: Okay.

MR. CHAUDHRY: Also, the use of energy recovery systems, is at the center of standard industry practice, which is being implemented.

MR. TRASK: Say that again, Shahid?

MR. CHAUDHRY: The use of energy recovery systems.

MS. WHITE: Such as?

MR. CHAUDHRY: Such as use of based water heat for multiple purposes. In certain cases you can use -- heat hot water for those applications. So that's under standard industry practice which is being used.

MR. KLEIN: I'm missing something. They use some part of the process in wastewater treatment that's got heat in it?

MR. TRASK: Well, like when you take a bath and you drain the tub, trying to get the heat out of that hot water that's going down the drain.

MR. CHAUDHRY: Well, let's say, you know, from a process one of the discharge is hot water. So rather than dumping that hot water as

such, use heat exchangers to heat the incoming feed water, so that would enhance the efficiency of the process, itself.

MR. KLEIN: Is that at the end user or in the utilities?

MR. CHAUDHRY: It's like a process. The wastewater treatment plants they are doing, they are -- industry is using the same thing. It may not necessarily be at the end user side, but I have seen it at the end user side, you know, where they are using hot water for space heating. That's another example of multiple uses.

MR. KLEIN: It definitely needs to be on the end user side, as well.

MR. TRASK: And it is.

MR. KLEIN: Thank you.

MS. LEWIS: Okay.

MS. WHITE: I just have a question of whether or not any of the utilities have obtained the advanced meters for their -- from their utilities for their energy uses. It gets to kind of the comments that Lon had made, so that if they were able to make any improvements in their peak demands or anything, are they getting the price signals that coincide with those efficiencies.

And this is just a question in terms of whether or not anyone's taken advantage of those strategies yet.

MR. TRASK: We did identify that one earlier today, water, time-of-use meters. But also just meters, in general.

MS. WHITE: Okay.

MR. TRASK: Both on the end use and -- in that sense they are an end user, the water treatment facility is an end user, but --

DR. HOUSE: But I think what she's talking about, if I can interject here, is that about half of the water agency electrical use or more is not either time-of-use metered or demand metered. And so what you've got, basically anything that's 250 horsepower or less has not been on a either time-of-use or particularly demand metered.

And so the utilities are now doing this. They're now putting the meters in. But you've got at least half of your electrical load that you don't know what happens, when you use electricity necessarily. And there's no reward for shifting it out of the onpeak, so you're just going to use it.

MR. TRASK: So, where advanced meters are installed they're hardly ever for the whole facility, just parts of the facility?

DR. HOUSE: They are now starting to install them, everything down to 200 kilowatts is now being installed.

MS. LEWIS: Okay.

DR. HOUSE: And I would say you could just copy the seven peak reduction measures that I talked about this morning down to this level, because that's really operational.

But one thing I did want to add, and it is an operational measure, but it has to do with scheduling. The water agencies are designed by water engineers. And they design the pumps to pump a given amount of water.

So what you'll typically see is you'll see a pumping bank that may be 2000 horsepower that's made of everything from, you know, several 500 horsepower pumps and 250s. But the point is they turn those pumps on, in almost all cases they turn those pumps on based upon volumes of water, not efficiency.

And so one of the things that we have found in every water agency that we've gone into,

is we can save about 15 to 20 percent of their electricity use by designating -- by looking at the efficiency of the pumps and talking to the operators and saying, when you've got this amount, putting the schedule together, when you've got this amount of water that you're going to be delivering or running through the system, use this pump and this pump.

And typically what they'll do is they'll turn one on, they want to make sure they've got -- they'll turn on a great big, a 500 horsepower pump and put a baffle in to reduce the volume of water, instead of turning on a 250 and a 100 horsepower pump.

So, there is just -- you put down there as operational efficiencies and pump scheduling.

MS. PARK: I wanted to add, based on what Lon is describing, you know, just kind of an umbrella concept which is -- and many of the water agencies have this as a principle, and that is integration of energy efficient principles into their design.

But what they haven't really done is done it on an integrated whole. So, kind of the things that Lon is describing, they don't design

it that way, you know. If somebody is optimizing the design of a system they're trying to minimize the capital costs, and they're not really accounting for and what are the other things that I can build into the system to give me flexibility so that I can do these things and reduce my energy load in the future.

MR. TRASK: Yeah, like for instance, what you were talking there about, Lon, you know, the thing that leapt to my mind was, well, variable speed pumps. But variable speed pumps cost a lot more initial capital than single speeds.

When they do their system analysis are they looking at energy use through the life of the system.

DR. HOUSE: In general, no. Remember, water agencies are designed by water engineers. And that's the way they've been designed. And that's why we talked about before lunch whenever we go into a system -- and there's some that are really good systems, but I mean there's a bunch of them, particularly the agricultural ones, where they still have ditch riders that go out -- we're talking about there -- they go out and turn on a

pump and wait until the tank overflows, and then turn it off again. They know it's going to do it within six hours or so.

But there are, in every case that we've gone in and done a system simulation of their system, there are efficiencies to be recovered through pump scheduling, the optimized pump scheduling. And what we've talked about before is using the storage not to meet water supply necessarily, but to also use it for electricity use, for peak reductions.

And, you know, we've done I don't know how many. And every instance that we've gone in there are still efficiencies to be received in both of those areas. And that's because -- within a few cases, I mean some of them are really good. Some systems are really good.

But a great amount of the systems don't have an energy emphasis and don't have an energy expert that looks at this. And so this is sort of new for them to say, well, what happens if we use our storage to optimize offpeak or minimize onpeak use instead of just making sure we meet our water deliveries.

Or what if we schedule our pumps not

based upon volumes of water, but based upon the most efficient use of electricity to pump that given amount of water.

So, within the existing system, just operational changes, there's huge potential within the water industry.

MR. TRASK: And at essentially no cost.

MS. DICKINSON: I think during the 2001 energy crisis, I know ACWA held a series of meetings with other organizations to try and educate their membership on how they could reduce some of their energy bills. Because in 2001 the bills were just through the roof.

So, the price signal was noticed then. But I think we've sort of slackened off since 2001.

DR. HOUSE: Well, then what I talked about this morning, the price signal is about to get noticed again, because I know with your guys and with the water agencies, they are approaching a panic at mandatory critical peak pricing tariffs.

Because they're sort of like electricity, when a customer demands water they supply it. And if that customer is using it in

the middle of the day, and they run out of storage or something, they've got to pump to do it. And if they're scheduling deliveries on a 24-hour basis, they got to run those pumps those whole 24 hours.

And so it'll be very interesting to see what happens this summer. But once the announcement came out that we're going to critical peak pricing I start getting all sorts of phone calls from people that were interested in having somebody come and look at their system.

Because before now it really didn't matter. That's not entirely true, but the rates were set up so that you had, you know, the big accounts were not really set up so that you were incentivized -- you were incentivized to get out of the onpeak totally, but once you were in the onpeak your demand charge overwhelmed your energy charge. So once you used a given amount of electricity in the onpeak that month you just might as well use it the rest of the month.

And so the rate design was not set up to, you know, force them to really think about these operational changes.

MR. TRASK: And I would be willing to

bet that once that kind of thing becomes fairly routine then nobody even stops to think about, oh, should I try to shift more since I'm going to go over anyway.

DR. HOUSE: The problem is, again, water agencies, with a few exceptions, are staffed by water people. And you can probably count, there's probably 15 or 20 of them that have an energy, the big -- a lot of the big guys do -- that have an energy expert on board.

So you've got people that are dealing with, you know, tariffs and dealing with pump efficiencies, and from an energy side, not from a water side. It's something that they just don't know that much about.

And they have to get help someplace. And so what they do is they go to the utilities, which don't have water experts, you know, in their auditing staff. Or they have to go someplace else. And so that's one of the services that ACWA has provided over the last several years, which was we realized there was virtually nobody out there that dealt with optimization and scheduling. And so we had to do that.

But, the problem is even if we set these

incentives up, there is the analysis that they can't do internally. They have to bring somebody else in because they don't have an energy person on staff.

MS. LEWIS: As a proposed strategy is ACWA's training adequate, or is that something that really needs to be expanded?

DR. HOUSE: The problem is that each water agency has a unique combination of things. Where their water comes from; how much storage they've got and things like that.

And so while you can tell them things that are going on, you know, like the critical peak pricing tariffs are showing up, they -- to --

MR. TRASK: Let me interrupt here. Somebody on the teleconference, we're getting some noise through from your desk. Sounds like --

MS. LEWIS: Keyboard.

DR. HOUSE: See, what they're going to do is their job is to make sure that they deliver sufficient water at the time the customer needs it with sufficient quantity and sufficient quality, with enough in reserve for whatever emergencies they have, fire and things like that.

And so unless someone is able to come

in -- and basically what you have to do is you have to come in and do a simulation of their system and show them that they can drop their reservoir another two feet and still maintain adequate reserves, before they will do it.

Because they'll say, you know, I'm going to keep that reservoir as full as I possibly can. And it's just, you know, it's not negligence on their part; it's they're water guys, and the water systems in California run really well.

They have not been analyzed or they're not operated for energy. And there is a tremendous potential. But it requires a lot of analysis on an individual water agency's part to make sure that they can meet their deliveries and their operating criteria, and do something to shift their electricity use.

MS. LEWIS: Okay, is there any other current strategies we want to talk about? I've already segued myself into proposed, so shall we make that leap?

MR. KLEIN: Yes.

MS. LEWIS: Okay. Any other additional proposed strategies that we'd like to talk about? I know that there's been some things that we

talked about this morning that belong in these stages as well. So we might want to talk about those.

I think you can start the discussion.

DR. HOUSE: Well, let me reiterate what I think Shahid said, but there are four generation types that the water agencies can use or are using.

And that's biogas, small hydro, solar and natural gas engines. And to some extent there are various ones using, like Inland Empire's got what, 6 megawatts of microturbines that they're running off their biogas facilities.

And a lot of agencies have -- they're putting in solar, and we've talked about before, and they're putting in small hydro. And a lot of agencies have natural gas engines they use for peaking purposes.

But there is a lot more out there. And when we talk about this afternoon about the institutional barriers, there's tremendous potential out there that's not being realized because of institutional barriers that are preventing efficiencies from, you know, from changing out a pressure release valve to a small

hydro facility. It hasn't happened because of various institutional barriers.

MR. TRASK: And then I think is a key of certainly what I want to accomplish in this study and in this group is to the extent that we can, identify those barriers, and then possibly this afternoon or possibly some other time, come up with ways that we can get over or around or through those barriers.

MS. DICKINSON: Are we going to do future strategies?

MS. LEWIS: Right now.

MS. DICKINSON: Okay.

MS. DAVIS: This is Martha Davis. I just jumped on and I'll have to jump off again, and I'll be back as soon as I can. This has been a great conversation today.

MR. TRASK: Okay, Martha, we had one without you there for awhile, but --

MS. DAVIS: -- a little bit. I heard IEUA's name come up, though, so --

MS. LEWIS: A lot, yeah.

MS. DAVIS: Okay, you guys, I'll be back as soon as I can.

MR. TRASK: All right, thanks.

MS. LEWIS: All right, thanks.

MS. DAVIS: Thanks.

MS. LEWIS: I think, Mary Ann, --

(Parties speaking simultaneously.)

MS. LEWIS: Okay, go ahead.

MR. AMON: It may be part of the discussion earlier on existing strategies. Would water transfers and water backing be considered a current strategy that has a water/energy relationship?

MS. LEWIS: Yes.

MR. AMON: So that's happening. Maybe we can add it to that list.

MS. LEWIS: That's a good addition. Okay.

MR. AMON: Now I have a new proposal for options. That when you mentioned on stormwater. Stormwater is huge. There's a tremendous amount of it. I guess this is the idea, but maybe a bit far-fetched, to promote urban neighborhood designs that reduce stormwater collection, which means treatment, by using landscape designs within the neighborhoods that would use swales and other catch basements, as well as larger nature pond basements as a way of moving that water in that

direction, instead of in the direction of the treatment plant.

MS. PARK: I think it's a fabulous idea.

MS. LEWIS: That's a great one.

MR. AMON: I live in a neighborhood that does that and we haven't counted how much water we don't send out to the treatment plant, but it's substantial. It's a 60-acre piece of land that --

MS. DICKINSON: Yeah, we need more of that.

MR. AMON: -- brings all the water --

MR. TRASK: California is the only state that still does that.

MR. AMON: Say what?

MR. TRASK: I believe California is the only state that routes their stormwater drains into the treatment system. I believe it is.

MR. AMON: But if there was a desire to do more landscape designing for urban, that would help a lot.

MS. PARK: That goes, I think, to the whole issue of, you know, the joint sustainability community planning. And there are a number of pilots going on throughout the state, I think, to do that; to integrate all aspects of, you know,

sustainability and efficiency into it.

So, not just landscape, but water efficient appliances, energy efficient appliances, PV, the whole thing. I think that's cool.

DR. WILKINSON: This is Bob Wilkinson; I'm going to have to sign off now, unfortunately right on a topic that's quite of interest to me. But I will be happy to follow up on some of the stormwater strategy issues after you get the notes. So I'll look forward to seeing those.

MR. TRASK: All right, thanks, Bob.

MS. LEWIS: Thank you, Bob.

MS. PARK: I would like to tell you one tiny story, but you will love it. And that is part of our Martha Davis IEUA pilot. When we first met with the staff they came up with this idea that was called the cork-and-the-pickles. And I was absolutely stymied by it until we figured out pickles meant pick holes in the manhole cover.

And that because they're a basin all the stormwater was flowing right in through these manhole covers into the sewer system. And so every winter their load for treatment was just huge.

So this fall they started a little program on a test basis that we're going to be evaluating. And they actually went around and they got all of their member water agencies to do this, as well. To run around and stick cork into those little holes that they usually use a pick to pick up manhole covers.

And I said, doesn't this suggest a strategy for a new business. I mean I think I ought to be going into designing a manhole cover. But it's really --

MR. TRASK: Just need a Dutch boy and a finger, that's all.

(Laughter.)

MS. PARK: I just thought that was amusing. But, you know, it apparently is a real problem. And there are areas where a simple little method like running around -- of course, you know, the cost of manpower is kind of high, rather than getting the right manhole cover.

MR. TRASK: I do believe I'm right that we are the only state that requires stormwater to get treated. But I do think that we've had a tremendous environmental benefit from it.

All the oil and water -- all the oil and

contaminants on the streets -- and, you know, San Francisco has been an ideal example -- would end up right in the ocean if it wasn't going through the treatment facility first.

MS. DICKINSON: But combined sewer overflows are not good, either.

MR. TRASK: Yeah, that's the --

MS. DICKINSON: And that's why most states don't do it.

MR. TRASK: -- bad part, which has happened just a few winters ago where the San Francisco system did overflow and we had raw sewage into the ocean, which is probably worse than oil and gas.

Okay.

MS. DICKINSON: I'd like to add a couple of ones regarding distribution system. We've been operating for eons on the premise that if you have a percent unaccounted for water and you keep that percent low, like under 10 percent, that you have a very tight system.

And there is a lot of new research that's been done internationally that shows that that's really a very bad way to account for your water losses.

L.A., for example, LADWP advertises 6 percent unaccounted for water rate, which if you do 6 percent on their production, is equivalent to what the City of Burbank uses twice over in a year. So it's a lot of water, and probably cost effective to recover.

So there's a new methodology that's been developed internationally called the International Water Association performance indicators. And what it does require is that you account for every single piece of the water balance. And there are new criteria that are being applied internationally. And AWWA is considering them for adoption in the United States. And I think we should do it here in California.

So, to account for all portions of the water produced and distributed by a water agency.

MR. TRASK: How would you do that?

MS. DICKINSON: It's a way of accounting, it's just an accounting method. And it's just a series of calculations. It's just a new way to do a system audit.

And then the value that you get at the end of it is not a percent unaccounted for water, because you're actually accounting for where all

your water is going.

And so it's a very sophisticated new methodology, and I propose we adopt it here in California. That would be a new strategy.

And then a second one, also tied to the distribution system, is just pressure management in general. Many parts of the system we operate at really high pressures. And there's, again, a prevailing wisdom in the water world that says you have to operate under high pressures to operate these irrigation systems. Because a drop in pressure really affects the distribution system and how it's -- irrigation system and how it's functioning.

But I think we need to get beyond that because you can save an incredible amount of water if you lower the pressure.

MR. TRASK: So sort of pressure optimization, I guess.

MS. DICKINSON: Pressure optimization is the best way to put that, yeah.

MR. TRASK: Just because I'm fascinated about these performance indicators, is it accurate to say that the way they do now is they have rather gross measurements of water produced and

water used, and they just subtract them --

MS. DICKINSON: Some of it's very --

MR. TRASK: -- and that's your unused portion?

MS. DICKINSON: Well, they'll just estimate. They'll say, okay, this is what goes for fire flows, and this is what goes for system flushing, and this is what we estimate our meter error is. And then they just whittle it down until they get the percentage to be below 10 percent.

I mean some of our systems are actually more like 22 percent. But they get to put all these fudge factors in. And, you know, they look lower than they really are.

And so the performance indicators actually ferret all that out and make you quantify a lot of the pieces of it, so that you get it all to add up to the exact amount of water that you've produced.

MR. TRASK: And the number one problem you'd be solving there would be undetected leaks?

MS. DICKINSON: Data. Well, undetected leaks, poor quality of the measurement devices, the metering, the production meters, the source

meters, as well as the customer meters. It's basically tightening down the accuracy of the entire distribution system.

And, you know, we've never really been very good at it. California's not unique in this. The United States, in general, doesn't pay attention to it the way the rest of the world does.

MR. TRASK: Sounds like transmission line losses, too. Anytime the electric industry can't account for production we just say, uh, losses.

MS. DICKINSON: I have a lot more on this if you're interested. I can bore you to death with all this stuff.

MR. TRASK: No, you're not boring me. Believe me, no, definitely keep it coming. If nobody else minds Mary Ann taking center stage here for awhile, keep going.

MS. DICKINSON: Oh, I'm done; I'm done.

MR. TRASK: Oh, you are? Okay. Anybody else?

MS. DICKINSON: In this section, conveyance, yeah.

MR. ROGGENSACK: One thing for

distribution that we're doing is with AWWARF is coming up with new demand forecasting tools for water deliveries. Most of these forecasting tools look mainly at weather, but we're trying to get them to look at other events like political events, sports events.

Just better tools to accurately predict when they'll have to pump and how much they'll have to pump.

MR. TRASK: So again, to optimize the conveyance.

MR. ROGGENSACK: Right, yeah.

MS. LEWIS: Does metering belong in this category, as well?

MS. DICKINSON: Well, you have metering within the utility system, the water agency system, because they meter their individual production meters, you know. They have like if an agency is buying water from Metropolitan, that's all metered in between. And that's not at the end use, that's within the system.

MS. LEWIS: Right.

MS. DICKINSON: So that metering needs to be checked and needs to be accurate, too. Because when meters fail they under-register. So

then more water is flowing through than is really being measured.

MR. TRASK: Occasionally it goes the other way, but not very often.

MS. DICKINSON: Very rarely.

MR. TRASK: I'll tell my submarine story. I was on a submarine, and water use on a submarine is extremely important because you have to make all your own water. That makes a lot of noise, so that's the worst thing that could happen is you're in a submarine that makes a lot of noise.

So our captain determined that we were using way too much water. So he clamped down first on showers, you know, length of showers. And then finally just turned off the showers all together. Causing a near mutiny. And then they found out that the meter was bad and it was registering way more water than we were actually using.

(Laughter.)

MS. DICKINSON: Wow, that's surprising. Must have been the depth.

MR. TRASK: Or just Navy-run meters. Or Navy-purchased.

MS. PARK: One of the questions I have is on number 3, when, Mary Ann, you were talking about pressure optimization and management. Does that include, other than leak detections, but strategies inside the pipelines such as slip mining, you know, to reduce leakage?

MS. DICKINSON: Yeah, but pressure management means you can operate your system -- you don't have to operate your system at 100 psi, you can operate it at 60 or sometimes even 50. And then there is less water being consumed at the user end because it's not coming out so quickly.

MR. CHAUDHRY: I think benchmarking is another way a utility can evaluate their performance with others in the industry. And that's also a good tool.

MR. TRASK: Kae and I were talking about that, that evaluation obviously is -- well, I think it's an area that could use a lot of attention. We put out, for instance, the PUC had a really hard time then when they were trying to come up with ways that the utilities could make money off of conservation, the negawatt concept.

And it all sounded great until you, you know, how would you verify it. What would your

accountant look for to decide how much the utility would get paid for its conservation measures.

MR. CHAUDHRY: But I think, you know, benchmarking is strictly for the utility, itself, because they are kind of self-evaluating their performance versus others in the industry. So I don't think, you know, it has anything to do with their rates -- efficiency, basically.

Another way is use of most energy efficient component in the system rather than overall system, the component level, you know.

And I can mention an example. We are funding a project on desalination again, incidentally, where by using more energy efficient -- we are trying to demonstrate that the energy consumption can be reduced by 20 percent just for the desal process, itself. I mean membranes evaluation. So, that definitely is helpful.

And use of new equipment. I mean, historically water, you know, wastewater treatment plants they were built about 50 years ago. And the energy efficiency was not really an indicator or a factor at that point of time. And most of these plants they were a pretty good amount of safety margin by the designers. And because

energy was not an issue at that time, and these treatment plants are still the same way. Nothing has been changed over these years.

While there's a lot of gadgets, very energy efficiency gadgets and so on and so forth is available in the market, but as long as the system is working nobody is bothering to change their process or equipment, or make use of latest gadgets, you know.

(indiscernible) is a very good example in wastewater treatment plants. Historical this has been used from day one probably just to see how oxygen is transferred through the treatment, activators treatment (indiscernible).

But there are new probes available which are based on the enzyme activity rather than on actual oxygen demand. So that's -- my point is that there are a lot of new equipment available in the marketplace, you know, where by using those a significant amount of energy can be reduced.

So that's new equipment.

MS. DICKINSON: Number 6, which is the utility benchmarking performance evaluation, that actually is the same kind of thing as the performance indicators number 2. Because what the

performance indicators are doing is benchmarking a water loss component analysis.

And so utilities now all across the world can compare. They can say, oh, I have an infrastructure leakage index of 15, or I have an infrastructure leakage index of 2. And the perfect score is 1. So the farther -- and that is a much better way of comparison in the percent unaccounted for water, which is wildly different depending upon the size of the system.

(Parties speaking simultaneously.)

MR. ROGGENSACK: -- again, that's IWA, what does that --

MS. DICKINSON: It's these performance indicators. It's a methodology for evaluating --

MR. TRASK: International Water Agency.

MS. DICKINSON: Yeah, International Water Association for evaluating system water losses; for managing water losses.

MR. CHAUDHRY: Yeah, the difference between 2 and 6 basically is that 6 embarks on the operation side of the utility, itself; what's happening inside the plant, inside the boundary of the plant.

While number 2 mainly deals with the

leaks and accounting unaccounted water.

MS. DICKINSON: It also deals with efficient operations from all points, from the production meter right at the reservoir or the imported water end all the way through the system. So it does include the treatment end, too.

MR. TRASK: And this would also address the pump testing that we talked about.

MS. DICKINSON: Right.

MR. TRASK: Because there's a lot of leak back in pumps; it gets worse and worse over time.

DR. McMAHON: Picking up from 7, in addition to that there are new designs, a pond-based wastewater treatment, for example. Instead of taking the current designs and trying to improve them, they're all printed designs if you're building a new facility. They would be much less energy intensive.

MR. TRASK: Okay.

MS. PARK: One of the thoughts on those new alternative water system designs, they don't really know what is being done about it really, but it's kind of like the concept of distributed electric generation. Distributed water supply.

My understanding is one of the real issues in treating potable water is that the disinfection, for example, takes place at the large treatment plant center. And then by the time it's distributed you need to shoot it with more chlorine, or you need to do something.

But if you were to be able to do disinfection closer to where the actual end use is, it could be a real savings in process costs.

MR. TRASK: We have that in the present as decentralizing water and wastewater.

MR. CHAUDHRY: I think Laurie's talking what point of use disinfection or treatment -- is that right? If I'm not correct?

MS. PARK: Yes, I think so. And, you know, I also don't know the state of the technology. I saw something on television the other day about this thing that you can buy and it makes water out of air and all that sort of thing.

(Laughter.)

MS. PARK: I mean I think that's kind of cool, but --

MR. TRASK: Instant water, just add water.

DR. McMAHON: If I can comment. We're

not directly involved in that, but I've also heard about some membranes. You know, there's talk of -- tech, but there's current membranes that they're trying to downsize to the house size where you could basically process your own wastewater.

MS. DICKINSON: Oh, RO at the tap.

DR. McMAHON: Exactly.

MR. TRASK: They do it on the space shuttles.

DR. BURTON: Along that line --

MS. DICKINSON: What a brave new world.

DR. BURTON: -- I think we would need new strategies for getting public acceptance of that. There's a tremendous energy waste right now, for example, in Orange County where they do this beautiful treatment of water and then put it back into the ground. Have it stay there for a year before they can re-use it for potable purposes.

So, if --

MR. TRASK: Well, we hear it constantly in our power siting cases. We did one out here for SMUD and they were going to use recycled water. And the people stood up at the siting meeting and go, there's going to be sewer water

going through that power plant. Yeah, that's an issue.

MS. DICKINSON: Hey, they're drinking it in their beer. Miller. Everybody drinks Miller Lite.

MR. TRASK: Okay, well, I think we have enough categories here. And, also, in general, as people think of these, feel free to fire them off in an email to me or to the group. Especially the ones that you think, oh, we should have considered that one.

All right, Kae, so this is where we're going to go back and at least take a real quick look at those that have potential to increase energy use.

MS. LEWIS: And we can get through at least one of our -- up here are the four questions that we'd like to get a little discussion on each one. And we'll take a little break, but why don't we deal with the question 1 before we do that.

In other words, of all the strategies for this morning sessions on end use and in the other stages that we just talked about, which one of these do we suspect actually increases energy use.

MR. TRASK: Or has the potential to. And that's why I think we need to think more comprehensively about this, like the bounce-back issue and essentially the real-world effect of these programs.

I think many of these being, you know, the BMPs that were from CUWCC, you know, their more sort of broad philosophies almost. So obviously we're not going to see increased energy use from increased auditing, other than the car to drive to the customer.

Water conservation legal standards. Certainly toilets, faucets, just about everything that I can think of as far as standards. I can't think of anything offhand that would --

MS. DICKINSON: Well, number 2, BMP refers to the plumbing code. So it's retrofitting to the plumbing code. So maybe that would be the more precise way to do that.

MR. TRASK: Okay.

MS. DICKINSON: To the, you know, that's in EPACT.

MR. TRASK: Right, but as far as what a builder is required to do, to build into the system to save water, is there anything from those

standards that would actually increase energy use?

I can't --

MS. DICKINSON: No, unless you consider that the sensors that are required by the Public Health Codes are a factor. We don't have sensors on this list anywhere, but I think somebody's got to look at the fact that they probably are reverse benefit of what is intended.

And I think we've all be in airports and facilities where the sensors just go even when you don't even need the toilet flushed or the faucet tap opened.

MR. TRASK: Yeah, three or four flushes, sometimes.

MS. DICKINSON: Yeah. Well, my all-time record is seven.

(Laughter.)

MS. DICKINSON: Denver, DIA Airport. Seven times.

MR. TRASK: After these in brackets I'll put like maybe the energy system, in fact, so how do we say that in a nutshell?

MS. PARK: Incidentally, I have a question, and that is on these automatic sensors for faucets and things, has it been shown that

they really do save water? Because --

MS. DICKINSON: No, it hasn't been shown.

MS. PARK: -- they don't.

MS. DICKINSON: And they haven't been instituted as a water conservation program. They've been instituted as a public health program, so you don't have to touch the tap or touch the handle of the toilet.

It's a way to prevent you from contracting the germs of your predecessors. But for some reason it's gotten this reputation of being a water conservation device, and it's not. The bathrooms all use more.

MS. PARK: It didn't strike me at all, I mean, you know, I was -- it takes awhile, it comes on; takes awhile after, it goes off.

MR. TRASK: Yeah, has anybody even done any verification that it actually is a public health benefit?

MS. DICKINSON: Actually there's a study that's just starting now. We're working with Kaiser to test, do an actual test of the sensor faucets from a water conservation point of view. And so that'll be the first.

MR. TRASK: I saw that study recently where they did essentially bacteria testing in all places in your house and your workplace. The bathroom was the cleanest.

(Laughter.)

MR. TRASK: You know, because you're cleaning it all the time.

MS. DICKINSON: It's the coffee pot handle.

MR. TRASK: It's the desk, your workplace desk had the most bacteria and everything else, because nobody ever cleans that.

MS. DICKINSON: And your telephone, huh?

MR. TRASK: Probably the phone, too.

DR. McMAHON: The other thing that's really bad is shopping carts.

MR. TRASK: Nobody ever cleans those.

DR. McMAHON: Awful, yeah.

MR. TRASK: Now you're going to see everybody shopping with their elbows.

(Laughter.)

MS. DICKINSON: Plastic gloves.

MR. HARTLEY: Haven't you seen the ad where the lady and the child are going to the store and she takes her can of Lysol and sprays

the shopping cart?

MS. DICKINSON: Oh, no, I hadn't seen that.

(Parties speaking simultaneously.)

MR. TRASK: The source of all accurate information.

Okay, so other than going up -- well, again, the legal standards -- oh, that's nice. I was told to guard this mouse with my life.

Mary Ann, the legal standards, do they require the automatic flushing?

MS. DICKINSON: No.

MR. TRASK: Okay, so that --

MS. DICKINSON: No, but that's a -- it's not clear to me because I'm not in the public health field, but it's not clear to me whether there is some sort of building code requirement for commercial installation and institutional installations. I have no idea about that.

But the plumbing code is just the standards that are in the Energy Policy Act. So it's just toilets, showerheads, urinals and faucet flows. And that's been in since 1992.

MR. TRASK: Okay. Water audits, obviously we're not going to have increased energy

use from audits. Metering of all end use connections. Not going to have increase there.

Landscape outdoor auditing and budgets. The only problem I see there is shifting to high pressure drip irrigation in order to stay within your budget, which would actually increase energy use, or could increase energy use.

MS. DICKINSON: Well, actually, ironically the increase in energy would be from website logging on to check your budgets.

(Laughter.)

MS. DICKINSON: Because all these budgets are done on websites. So, --

DR. McMAHON: My theory is you would have been on the website to do something.

MS. DICKINSON: Yeah.

DR. McMAHON: -- substitution.

MS. RUDMAN: I'm just wondering if metering might have some energy factor. I just had a question of whether metering would have an increase in energy use, because you might be monitoring the impacts, you know, the output of metering and -- I don't know, do meters use electricity?

MR. TRASK: Yeah, not much. I would

think that you would probably not, you know, at worst it would be a wash. Being aware of energy use or water use almost always causes savings. Just the awareness. It's something to think about, though.

Okay, replacing clothes washers with super efficient washers or others. Certainly most efficient washers are the front-loading type which use a lot less water and generally less energy than standard.

But are there cases where it would actually use more energy, by going to a more water efficient clothes washer? Or dishwasher, for that matter.

MS. DICKINSON: I don't know of any water efficient washer that isn't also energy efficient. But I think there is a tradeoff. I don't think it's a significant tradeoff.

MR. TRASK: Right. Like in dishwashers I know they heat the water and keep reheating and reheating it in the dishwasher. But I don't think I know of any instance where that energy use is getting greater.

DR. McMAHON: No.

MR. TRASK: All right. Public

information, school education. Those are pretty straightforward.

MS. DICKINSON: Well, nine, commercial/ industrial end uses. There, depending upon what the process is that's being changed, it could mean a higher energy production. I'm thinking specifically of x-ray machines that are now going from a wet process to a dry imaging process, which is likely to have more energy impacts.

And that's an example of one where going to a waterless technology is actually creating an energy use.

An x-ray machine uses energy anyway, but the question is -- I don't think it's -- it's not cooling, it's imaging. Like a processing, film processing. You're not processing it and using water; it's a dry image kind of thing.

MR. TRASK: Oh, I see. Okay, so it's not for --

MS. WHITE: So do they have to heat it, then? Is that where the additional energy is coming from where they're actually --

MS. DICKINSON: Well, actually, I don't know that there is additional energy, I'm surmising that there probably is.

DR. McMAHON: I think it's because it's digital you're using electronics instead of, you know, a film and a process there. But I don't -- I'm just not aware of a fair comparison of total energy in those two situations.

MS. DICKINSON: Yeah, I don't know that that's been looked at. So it's a could, yeah.

DR. McMAHON: Yeah.

MS. DICKINSON: Could have higher energy use.

MR. TRASK: This is where we need Gary. It's his pet issues.

But that's something that we need -- I personally feel that that's probably an area that I need to do considerably more investigation. And especially, I mean I know we have, for instance, in the cement industry new technology and requirements there to get a lot of water out of that. What effect does that have on energy, I can't say offhand. Other than obviously you're not using energy to move the water. But it must --

MS. DICKINSON: There are some experts that we could bring in to talk with you who do nothing but commercial and industrial audits for

water usage.

Now there's a guy in Orange County named Irwin Margiloff, and that's all he does. And his, you know, testimony before you could be very interesting.

But there's not been a lot of empirical research done on the commercial and industrial savings. Mainly because it's a very changing field. By the time you study something it's moved on to yet another technology. So I don't think we have really good data.

MR. TRASK: I mean it seems like most of them are efficiency. You put in more efficient pumps, more efficient motors, more efficient membranes.

MS. DICKINSON: Some of them are, yeah, actual process changes. Changing the way you're handling the product. And so a guy like Irwin can come in and say oh, this is what I see in the field. And that could be very useful.

MR. TRASK: Like in food processing, for milk for instance, you have pasteurization and then you have ultra-pasteurization. One, ultra-pasteurization you have to get it up to, I think it's 200 degrees for a minute. Pasteurization is

something like 110 degrees for 30 minutes. So how do you -- you know, obviously you get it up to 200 degrees, it takes a lot more energy. But you only have to be there for a minute. Things like that; I'm not sure anybody's looking into that.

But, yeah, I will take you up on that offer.

MS. DICKINSON: Yeah. In the pollution prevention world is where a lot of this stuff is happening, where the environmental regulators are saying, we want to reduce the amount of discharge of hazardous materials and other types of regulated discharges. And in reducing the flows you are reducing your discharge.

So a lot of this industrial innovation is coming from the pollution prevention side of the house.

MS. WHITE: That's also where some of the water re-use stuff is coming into play. And that's why I wanted to get a little clarity on -- this is your end use list, right?

MR. TRASK: Correct, yeah. And, Gary, now that you've joined us, we're talking about, especially in the commercial, institutional, industrial end use, what is out there currently

that has potential to increase energy use from water conservation in those sectors.

MS. WHITE: Where did you put increasing availability of recycled water in your lists?

MR. TRASK: Oh, it's in there somewhere.

MS. DICKINSON: Not quite expressed that way, though. In other words, not increasing the supply of recycled water. That's not in there.

MS. WHITE: That's not in there?

MS. DICKINSON: Well, no, not quite like that, no.

MS. WHITE: Okay, there --

MS. DICKINSON: Just supply --

MR. TRASK: Well, we did have one about developing local supplies, which would include increased --

MS. WHITE: Yeah, because there is a direct correlation to increased treatment to meet particularly some of the tertiary discharge requirements and increased energy use. But at the same time, you are eliminating additional wastes and expanding supply.

So how you capture that, or how you want to reference it, do you want to reference it as an additional supply? And to get this additional

supply you're adding greater energy use. Or do you want to list it as pollution prevention which requires more energy, but gives you cleaner water in the end kind of thing.

MS. DICKINSON: The thing about recycled water is that's probably got the most embedded energy cost of all, even though it's, from a water perspective, it's great. But, you know, that's water that's gone through several cycles, energy intensive cycles.

MS. WHITE: Yeah, --

MS. DICKINSON: You know, collection, treatment; then collection and treatment and distribution and pumping again, you know; you're moving that around.

MR. TRASK: But we're talking about the end use side of the meter here. The use of gray water for irrigation. Certainly there must be also kind of similar concepts on the commercial/industrial/agricultural side.

MS. WHITE: Well, I know in power plants we press for a lot of water recycling within their processes.

MS. DICKINSON: And they've done a lot --

MS. WHITE: Yeah, and so there are other industrial facilities. The power plants are, of course, the ones we're most familiar with, but other industrial facilities that are doing the same sort of thing.

MS. DICKINSON: Oil refineries, same.

MS. WHITE: Yeah. And part of it is to address their water demand requirements, but it also is very much driven by pollution elimination requirements and objectives.

So it's one of those funny little things I'm having a hard time figuring out where you want to put it for an appropriate discussion, because it's so multi-faceted.

MR. TRASK: Who said oil refineries? Was that you, Mary Ann?

MS. DICKINSON: Pardon me? Oil refineries.

MR. TRASK: Did you say oil refineries?

MS. DICKINSON: Yes.

MR. TRASK: Because that's something that I've actually assigned somebody on our water team to look into. Do you have some knowledge in that area?

MS. DICKINSON: Yeah, Chevron, the

Chevron plant down in El Segundo is one.

MR. TRASK: I will get you in touch with that person.

MS. DICKINSON: West Basin has got a direct recycling feed to them, recycled water feed.

MR. TRASK: We were trying to come up with how many gallons of water does it take to make a gallon of gasoline.

MS. WHITE: Is that like asking how many people does it take to screw in a light bulb?

(Laughter.)

MS. DICKINSON: No, it's worse because you're not sure you want it lit.

(Laughter.)

MR. TRASK: How many Commission Advisors does it take to --

MS. WHITE: Do you want that diesel or gasoline?

(Laughter.)

MS. LEWIS: Matt, could you go back to an earlier part of your list? You have conservation pricing, that has some potential.

MS. DICKINSON: We've got that repeated several places as conservation -- water tariffs

and it deals with the whole rate structure issue.

MS. LEWIS: Depending on how you react to pricing, you could increase.

MR. TRASK: Right, --

MS. WHITE: Are you talking about water rate structure, or are you talking about electric rate structure?

(Parties speaking simultaneously.)

MR. TRASK: Water.

MS. DICKINSON: -- have combined billing later.

MR. TRASK: Essentially you're talking about water use in the hot summer days no matter what it is --

MS. DICKINSON: Well, there are agencies that have seasonal rates where the landscape irrigation water is more expensive. There are agencies that have tiered, sharply tiered block rates where the more you use the higher your block and the more expensive --

MR. TRASK: Right, but without a meter.

MS. DICKINSON: No, no, these are agencies with meters, yeah. You have to have a meter to do this.

MR. TRASK: But it would just be for

weeks at a time. Couldn't obviously do it for hours at a time.

MS. DICKINSON: No, it's your monthly billing period.

MR. TRASK: So, essentially they would say, okay, when it's hot out, the hot months, you're going to pay more for water --

MS. DICKINSON: Now, I know we're all in Sacramento, so we lose perspective on the rest of the state, but if you look at the state as a whole, only 10 percent of residential customers are unmetered statewide, as a whole. So that's not bad. All this fussing over --

MR. TRASK: I would have thought it would be much higher --

MS. DICKINSON: -- metering, it's only 10 percent. But that 10 percent's in Sacramento and it's the Central Valley --

(Parties speaking simultaneously.)

(Laughter.)

MR. TRASK: You're talking though about only people who are connected to a water agency, but are --

MS. DICKINSON: Oh, yeah, I'm not talking about the groundwater pumpers who pump

their own well, yeah, no, just --

MS. LEWIS: But to avoid your TOU water pricing you could certainly be, you know, putting in instrumentation that's going to increase your energy use. I'm thinking particularly in landscape.

MR. TRASK: Well, for that matter, I would assume that a water time-of-use meter uses energy. So if you're going to put in a smart meter, anything more than just your basic mechanical meter --

(Parties speaking simultaneously.)

MR. TRASK: I would be willing to bet you're talking miliwatts per device, but --

MR. KLEIN: Unfortunately it's not only 10 miliwatts per device. Most power supplies are horrid. But it should be -- but it should only be actually a tenth of a miliwatt per device, let's go really low.

MR. TRASK: So we just put a little solar cell in each water meter.

MR. KLEIN: Oh, good.

MS. DICKINSON: Is that like a little RO facility at everybody's tap?

(Laughter.)

UNIDENTIFIED SPEAKER: Yeah, but you wouldn't get any water, either.

MR. TRASK: There's always somebody that's just immediately think of how to get around it.

(Laughter.)

DR. HOUSE: While we're looking at the time-of-use water meter study, for residential meters these guys, first of all, time-of-use water meters don't exist. So we're having to design them.

But there's a company that says that they can run off of -- for residential they can run off of two watch batteries guaranteed for five years.

So I suspect that time-of-use water meters aren't going to have much of an impact.

MR. TRASK: Are those manual read?

DR. HOUSE: But the other thing I did want to sort of an editorial comment here. One of the reasons that we're doing -- that we're interested in this is not just for getting the water customers to, well, to see what profiles the water customers have and getting them to shift out. But also for detecting leaks.

Because if you have a time-of-use water meter and it will show you if everything's shut off in your system if there's still water being used. And so one of the ancillary reasons that we're looking at that is for leak detection on the customer side.

And then comparing that with the supply side and seeing if there is -- if they don't show up, they don't come out to be the same, be able to identify that there are leaks in various parts of things.

But the only way that you could do that is if you have time-of-use data, which doesn't exist. And like I say, right now the meters don't exist yet, either.

MS. DICKINSON: Well, if you have a meter that's got good low end resolution, if you go down and look at a meter in the meter box now, there's a little triangle that does move if it's leaking. But it would have to be a pretty big leak for most consumers to see that.

But, yeah, that's -- and low end resolution, good low end registration of a meter is pretty critical, because that's one of the problems with meters now.

And, again, looking at the European standards, the ISO standards for meters are much more strict than what we have in the United States. So they measure much more precisely.

MR. TRASK: And, Lon, would those be remote reading, or would still have to have a meter reader go right to the meter?

DR. HOUSE: The idea is, and we'll see, because we're still in the progress and process with the PIER program here, but the idea is that right now meters are -- because they're all volumetric meters, and they have to be hand-read, these would be telemetry read.

And so they would, the water agency that's really interested in this is Coachella is the site, is interested in doing it not just for the time-of-use information, but for leak detection and for reducing meter costs. Because they've got -- it can either be localized or they can just have the truck that goes by and reads as it drives down the street, rather than have the guy get out and walk down the street and read the dials on each meter.

So there are some real efficiencies that are available.

MR. TRASK: And when it's 112 degrees outside that water meter guy would probably really appreciate that, stay in that air conditioned car.

MR. KLEIN: So why not actually have it connected like, you know, radio frequency, no car. I mean if we're doing this right --

MR. TRASK: Well, to get a transmitter that --

DR. HOUSE: That's one of the things that we're looking at, but because the -- you'd have to set up a localized collection point that's run off the grid. Because what you want is you want to make sure that these meters are not very expensive to put in, because you're putting in a lot of them. And that have a fairly reliable life.

And you're using the ones like we're talking about, they can't transmit a very long distance without sucking up their battery use. I mean the problem is that the water meters do not have electricity at the water meter site.

You guys, for those of you who are metered, think about it. Your water meter is on the street. Your gas and your electric meters sitting on your house. And so there isn't a power

source at the water meter. So we've had to look at various other things.

But you can set up localized antenna, repeaters and stuff. But that has to do with the distribution.

MR. TRASK: Or little impellers so that you have hydroelectric power to meters. All right, I didn't say that.

MR. KLEIN: Actually you should know that there is a faucet made with exactly that for commercial buildings. It has a little waterwheel in it and it uses a percentage of that to charge the battery that runs the sensor that sees your hands.

I'm serious. Made by Toto. I've seen it. It works really well.

MS. DICKINSON: And how long does the sensor run the water?

MR. KLEIN: You'd have to ask Toto about how they're set. But the point is it's just to charge the battery that makes the sensor work so it sees your finger. And they don't have to fight batteries or replace them --

MR. TRASK: So it's a water powered sensor?

MR. KLEIN: Um-hum. And it is a little waterwheel, I hate to tell you that, Matt.

MR. TRASK: Well, I think this number 9 here is probably an area that has maybe the most unknown as far as energy effects. Just because, you know, we're talking such a huge range of customers, processes, equipment --

MS. DICKINSON: But with a large energy demand.

MR. TRASK: Right.

MS. DICKINSON: You know, so this is the big enchilada.

MR. TRASK: Right.

MS. DICKINSON: This one and landscape are the two big ones.

MR. TRASK: So, it's something that we should keep coming back to over and over again.

MS. LEWIS: So let's get through this list real quickly so we can take a break.

MR. TRASK: Right. Wholesale agency use. Here we're talking about, you know, people like MWD need to provide financial incentives to their wholesale customers. Don't see any energy implication off of that.

Same -- conservation pricing was similar

to the --

DR. HOUSE: Matt, let me just back up. One of the things that you may want to do is you may want to get Calleguas to come up here and talk to you guys. Because they're a wholesaler that serves Ventura County. They're putting all of their accounts on -- it's on real time access, all of their water meters to their retail agencies. And they're going to go to time-of-use water pricing, too.

And so it's the first case -- they got a $3 million grant from the Bureau to do that. And so one of the things that you're seeing is the wholesale agencies also differentially price water throughout the year.

And they're now getting to where they're looking at differentially pricing it throughout the day, too.

So the whole -- if you look at the whole continuum you've got the great big entities, like DWR, that go into the wholesalers that are going to the retailers that are going to the end users. All the way along that process you can put in time-of-use meters or issues. And be able to shift your electricity use and your water use out

of the onpeak period.

MR. TRASK: Calleguas, how do you spell that?

MS. DICKINSON: C-a-l-l-e-g-u-a-s.

DR. HOUSE: And you probably want to talk to Susan Mulligan; she's the head of engineering for them.

MR. TRASK: Yeah, in general for the June 8th workshop I'm trying to bring in more of a, well, utilities number one, and sort of government-to-government agency level, which is why I'm bringing in somebody from SemiTropic; MWD will be here. This would probably be a good complement to them.

MS. DICKINSON: Let DWP come and talk about how they deal with both sides of the house.

(Laughter.)

MR. TRASK: James, are you there?

MR. KLEIN: I think they're legally not allowed, right?

MR. TRASK: They pledged to give us all the information they want, as long as you don't get the water sector against the power sector and vice versa.

MS. DICKINSON: Okay, then I would

recommend you get the City of Anaheim to come in. Because they actually do have a water and energy side. They talk to each other.

DR. HOUSE: Or you could talk to Imperial. I mean they're a big producer, a big electricity producer. And they're actually interested in it. They have their own controller and their own issues.

But you've got Modesto, you've got Turlock, who all supply water and electricity.

MR. KLEIN: And the City of Palo Alto does all four, water, sewer, gas and electric. Now that's a novel idea.

MS. DICKINSON: Yeah, that's an anomaly in this state, too.

(Parties speaking simultaneously.)

MR. KLEIN: They're a very small utility in a sense, but they actually have to -- but I'm convinced that they don't all talk to each other. I've been there and chatted with them and I'm not convinced that each part of the house is allowed to talk to the other one.

MR. TRASK: I can almost guarantee it. Yeah, there's only a handful of municipal gas utilities in the whole country.

MS. LEWIS: Let's finish this question.

MR. TRASK: Okay. So conservation pricing, seems straightforward. Conservation coordinator --

MR. KLEIN: On the conservation pricing I want to add an idea for that. Coincident time-of-use water and energy rates. If you're going to go to TOU, I'm wondering what the impact of coincident or noncoincident pricing would do to everybody.

MS. DICKINSON: I think this is an existing list, not the future list.

MR. TRASK: Yeah, --

MR. KLEIN: I'm sorry.

MR. TRASK: -- down under proposed.

MR. KLEIN: Okay, I left, my apologies.

MS. DICKINSON: We're still in -- we didn't make up a lot of ground when you left.

MR. TRASK: So, coincident water --

MR. KLEIN: Sorry.

MS. LEWIS: We're identifying strategies that increase energy use.

MR. KLEIN: Well, okay, that's the other way, it might not, right. I don't know.

MR. TRASK: We'll come back to that one

when we get down there. We've got a long way to go. So, where were we. Conservation coordinator, obviously.

MR. KLEIN: What's a LORS?

MR. TRASK: LORS, you guys need to work on some siting projects. Laws, ordinances, regulations and standards.

MR. KLEIN: Thank you.

MS. WHITE: In that one you may want to add the Recycled Water Act enforcement. Under the Recycle Water Act, some local jurisdictions can actually require industrial users who have cooling towers to use recycled water when it's available. And that would and does increase the energy use because you're actually switching from a potable municipal water supply to a recycled water supply.

MR. TRASK: Of course, in many instances the recycled water is being made already. They're just trying to find people that can use it, rather than put it back into the stream.

MS. WHITE: Exactly.

MS. DICKINSON: Well, here's another one, too. Water softeners. Some municipalities are now outlawing water softeners because of the TDS load. And that's an energy intensive process

that then is giving an energy benefit, so --

MS. WHITE: Right.

MS. DICKINSON: -- add that to the list. Water softener.

MR. TRASK: That's an existing.

MS. DICKINSON: That's an existing, yeah.

MS. WHITE: Yeah.

MR. TRASK: Okay, so --

MS. DICKINSON: You could put it as part of LORS.

MR. TRASK: It is part of LORS?

MS. DICKINSON: Yeah, because it's an ordinance.

MS. WHITE: Yeah. It would be people required to not use them. You can't buy them, you can't apply them.

MS. DICKINSON: Prohibiting them, prohibiting the usage --

MR. TRASK: Yeah, those things are nasty. You can tell it's getting late in the day. I'm missing more and more letters.

MS. PARK: Let me ask, is dual piping a requirement right now, or is it left to local jurisdictions?

MS. WHITE: No, dual piping is required. And you have to have a lot of valves, back-flow valves and existing infrastructure on the piping to prevent any potential, not any mixing, but any potential for mixing.

And so --

MR. TRASK: The only time they can connect is through many millions of tons of earth. Once you put it in the ground and take it back out, then you're okay.

MS. DICKINSON: Was your question all construction or just construction that's using recycled water?

MS. PARK: All new construction.

MS. DICKINSON: I don't know that there's a requirement for dual piping in all new construction unless recycled water is intended to be used.

MS. WHITE: Yeah, that's what I thought the question was. That -- dual piping is not required on all new construction. Only in those jurisdictions where they're establishing the recycled water infrastructure. And those are locally adopted codes and requirements. We wouldn't have them in title 24 or anything like

that.

MS. DICKINSON: But that's a good one for the end uses wish list for the future.

MS. WHITE: Yes.

MS. DICKINSON: Dual plumbing requirement.

MR. TRASK: Number 29.

MS. DICKINSON: Dual plumbing in new construction.

MR. TRASK: Would that be in all sectors? Is anybody thinking about that in residential?

MS. DICKINSON: Oh, yeah, that's where it would be the best. Right now, once you build a house and you don't have it dual plumbed then you can't use recycled water anywhere else but in the irrigation system.

MR. TRASK: Right.

MS. WHITE: And there are actually a couple of local agencies, at least one in the San Diego area, in Otay, where they were requiring dual plumbing in the bathrooms for toilet flushings and things like that.

MS. DICKINSON: You could hook it up to your washing machine.

MS. WHITE: Yeah. The only thing they weren't having the dual plumbing for was for like safety eye washes and stuff. But for firewater, for toilet flushing, that was going to be required for all the new construction.

MR. TRASK: Virtually anything but drinking.

MR. KLEIN: How about clothes washing?

MS. DICKINSON: Yeah, you could use it for clothes washing.

MS. PARK: But showering --

(Parties speaking simultaneously.)

UNIDENTIFIED SPEAKER: I don't think you can convince my mother of that.

UNIDENTIFIED SPEAKER: Using sewer water to clean my clothes?

(Laughter.)

MS. DICKINSON: Recycled water is pretty darn clean.

MR. TRASK: Okay, let's go back, 14, coordination of water and energy utilities. That's probably going to use a lot more energy, but it's all human, so.

MR. KLEIN: We're going to get lots of hot air out of it.

MR. TRASK: That's right. If we could only harness that. We could probably power the whole country off the third floor here.

MS. WHITE: Hey, watch it, now.

MR. TRASK: I'm not talking Advisors, of course.

(Laughter.)

MR. TRASK: Or Commissioners, or --

MR. KLEIN: You just eliminated half of the third floor --

MR. TRASK: It's that executive office.

MR. KLEIN: -- you're in trouble now.

(Laughter.)

(Parties speaking simultaneously.)

MS. WHITE: And I don't think Valerie is going to be real happy when you're talking just about her side of the house.

MR. TRASK: Ahh, I don't work for her.

(Laughter.)

MR. TRASK: All right. Low flow toilets, new construction, certainly no energy, potential for increase there.

Ultra low flow showerheads. Only if that would -- I mean here's probably the first example where we could talk about this bounce-

back. Do people take longer showers when they don't get as much gallons per minute?

MR. KLEIN: They wait longer.

MS. DICKINSON: They wait longer -- oh, you mean for the hot water.

MS. WHITE: Do we have any -- has anybody done studies on that? Do we know?

MS. DICKINSON: No, we don't know. I don't know that there's any studies.

MR. TRASK: Put that in.

MS. DICKINSON: Just anecdotal from those of us who have had teenagers.

(Laughter.)

DR. HOUSE: -- storage tank no matter what's in it, right.

(Laughter.)

DR. HOUSE: I don't think it has anything to do with the low flow.

MR. TRASK: Like all parents we were looking forward to the day that our son would leave. He lives in San Francisco now. So he shows up about once a week with two bags of laundry and takes long showers every --

MS. DICKINSON: Some things never change.

MR. TRASK: Okay. High efficiency commercial dishwashers.

MR. KLEIN: -- fine print of the contract. We're supposed to bring the laundry home on weekends because we're supposed to visit mom.

MS. DICKINSON: Yes, mom's supposed to do the laundry.

MR. TRASK: Yeah, we've never scolded him.

MR. KLEIN: It's a contract.

(Laughter.)

MS. WHITE: Make you feel wanted.

MR. TRASK: High efficiency commercial dishwashers. Do those use less -- obviously they use less water. Do they use less energy?

MS. DICKINSON: Yeah, they do.

MR. KLEIN: Because you don't have to heat the water?

MS. DICKINSON: Because you don't have to heat so much water, yeah. They have auxiliary heating helps for the water.

MS. WHITE: And actually I think we have --

MS. DICKINSON: They have to be

converted, I think there's a conversion --

MS. WHITE: I think we have some appliance standards for those, so you're meeting some additional efficiency requirements for those dishwashers.

I'd have to double check, but --

MS. DICKINSON: That's one we did --

MS. WHITE: -- this is the existing, right?

MS. DICKINSON: -- approve.

MR. TRASK: Um-hum.

MS. WHITE: So it would probably occur most when you actually have a changeover.

MR. TRASK: Right.

MS. WHITE: That you'd be able to get the higher efficiency dishwasher in place, or when you're opening a new place.

MR. TRASK: Retrofit or new construction.

MS. WHITE: But you --

MR. TRASK: This would, I assume, include the prewash or pre-rinse valve in --

MS. DICKINSON: No, well, we have it both ways --

MR. KLEIN: It's a separate one.

MR. TRASK: Keep that separate?

MS. DICKINSON: -- I actually have a little analysis of the commercial dishwashers, the energy and the water saved, that I can share with you.

MR. TRASK: Okay.

MS. WHITE: Oh, that'd be great.

MS. DICKINSON: That we put together a bunch of possible programs in 2001 during the big crunch. Because we thought we would, you know, we could help with some water conservation programs. So we developed one for this.

MS. WHITE: Did you get a lot of change over of the existing --

MS. DICKINSON: No, we never did the program. We never got the money to do the program. But we developed all the numbers for it, so I can share those with you.

MS. WHITE: Yeah.

MR. TRASK: One thing that occurred to me with the dishwashers, clothes washers and all of that, where you're using less water, but obviously having the same amount of dirt or food that you have to clean off.

Essentially you would have a much higher

concentration of waste product. Does that -- has anybody looked at that as far as what that means to wastewater treatment?

MS. DICKINSON: I don't know about wastewater treatment. We've looked at drain line carry to make sure that the drain lines are able to carry a higher concentration of waste. But in terms of the treatment load, that's a question for the wastewater treatment folks who argue that water conservation, even though it reduces flow, doesn't reduce load. And so therefore the treatment process is still the same.

MS. WHITE: If the only thing it does, having talked a couple of times with the people at South Bay, water efficiency, they have told me, actually helps reduce detergents as long as people are following directions.

If you go to a higher efficient appliance, whether it's a dishwasher or a clothes washer, and you adjust your detergents appropriately, you actually can help out the water treatment facility, because then they're really only having to treat the dirt, not all the additional detergents.

But the problem comes in when people

don't adjust, and they add just as much detergent, which isn't diluted as much, and that exacerbates the treatment problems at the facilities.

MS. DICKINSON: Yeah, they should rebate and incentivize the right detergent for their customers.

MS. WHITE: Or start educating people a whole lot more, because even just some simple education about use less detergent, going to cost you less, but your clothes still get as clean. And you don't have that caky soap residue on your clothes later, would help a lot.

But sometimes getting that education out, bringing people up to speed on what the newer technologies are actually able to do and --

MR. TRASK: And now --

MS. WHITE: -- how they have to adjust --

MR. TRASK: -- now we're identifying barriers, and that's later.

MS. WHITE: Sorry.

MR. TRASK: No, this is all good stuff.

MS. LEWIS: Let's take like three more minutes on this list.

MR. TRASK: Okay, three more minutes to

get three-quarters of it done. Once-through cooling, obviously that one seems like there's pretty good potential there for increased energy use.

MS. WHITE: Could we clarify that point just a little bit bigger, or a little bit better. We're talking about non-power plant once-through cooling applications, correct?

MR. TRASK: Correct, yeah.

MS. WHITE: Just could you just kind of add that so as to insure --

MR. TRASK: Sure.

MS. WHITE: -- that nobody here gets confused.

MR. TRASK: There's all sorts of processes, industrial, commercial that use water for cooling and it's just once through. The potable water goes through the heat exchanger. Picks up a lot of heat and then goes down the drain.

MS. WHITE: Right.

MR. TRASK: X-ray machines in hospitals is a big one. They're shifting, the x-ray machines are, to a refrigerant based cooling rather than once-through cooling which involves

compressor, just like an air conditioner.

MS. WHITE: Okay.

MR. TRASK: So those use substantially more energy than the once-through cooling.

MS. WHITE: Okay.

MR. TRASK: And, Mary Ann, you probably know other instances for that, so you can -- water pressurized brooms. Do those use more? They obviously must because the old brooms --

MS. DICKINSON: No, they use less water. The hose basically goes into the broom which has a very fine spray, so you're almost like a fast power spray, you're cleaning the sidewalk and it uses far less water.

MR. TRASK: Right.

MS. DICKINSON: So that ought to be, since there's no energy connected with this broom, there would be no energy use.

MR. TRASK: Right, so there's no motor or anything like that.

MS. DICKINSON: No.

MR. TRASK: It's just --

MS. DICKINSON: No, it's just --

MR. TRASK: -- using its same pressure.

MS. DICKINSON: Right.

MR. TRASK: Okay. Pre-rinse spray valves. Obvious good all around.

MS. DICKINSON: At energy saving, yeah.

MR. TRASK: Irrigation controllers. Yeah, you might have slight amount of increase in energy use, but I think that's negligible. Anytime you're talking solid state electronics I think you're --

Controllers to water budget.

MS. DICKINSON: That's not an increase unless you want to count the increased website activity.

MR. TRASK: Right.

(Laughter.)

MR. TRASK: Lost in the -- icemakers. Probably if you're -- yeah, it's one or the other. You can get an energy efficient icemaker or a water efficient icemaker, but not both, at the moment. Okay.

Cooling tower maintenance, no -- well, no, there you should also see an energy benefit because the cooling tower will be more effective.

MS. DICKINSON: Because you're -- yeah, you're reducing your cycles of concentration.

MR. TRASK: Right. Hot water

distribution. Okay, Gary, here's your moment. You've never quite convinced me that these recirculation pumps are going to save us energy as well as water.

In other words, when you're pumping the water back to the hot water heater, rather than going down the drain, obviously you're saving energy from the water -- that water doesn't have to be shipped to you anymore. It's just going round and round in a circle.

But then you're using energy because you put in that new pump and going back. Is there any way -- how would you quantify the savings versus the use.

MR. KLEIN: If you use a standard recirc pump which runs multiple hours of the day you are absolutely correct. But it has nothing to do with the pump, or 10 percent of it has to do with the pump. Most of the energy's in the loop that you try to keep warm.

So the fact is you've got pipes that have heat loss, and the heat loss in the pipes is continuous over the day if you run a 24-hour-a-day recirc pump.

So in that case the answer is you

absolutely have the potential to increase energy consumption. In fact, all technologies but one in the recirc methodology are likely to increase energy consumption. So there is a danger of increasing energy consumption unless you pick the right technology choices.

You also have the ability in distribution system improvements to put multiple water heaters in the house. And so the key element in the distribution system to manage -- to get it right, the structured plumbing concept, is to waste as little water as possible while you wait for the hot water to arrive.

At the extreme you'd have a heater literally at the end of every fixture. The problem is you need 10 kW on average electric, or 40,000 Btus gas at the fixture to keep up with one gallon of hot water per minute, on average, across the country. It might be 7 in some places, and 12 in others, but it's like that.

So that's a huge element, right. You want two gallons of hot water per minute, you double. So we've gone through this --

MR. TRASK: So it's really more of kind of a convenience factor; depends on how fast you

want that water to be hot at your tap.

MR. KLEIN: Well, but if you want it partly -- if you wanted fast, people want it fast because they don't want to wait. The quicker it gets there the less water ran down the drain. And so if we're worried about water you have to pay attention to the time.

I know of a couple of places in the state I've heard of that have ten-second ordinances. You have to have hot water within ten seconds. Well, at two gallons per minute that's a third of a gallon.

MR. TRASK: Down the drain.

MR. KLEIN: Which is a lot. We've got it down to a cup. That's a lot less than a third of a gallon.

MS. DICKINSON: Who has ten-second ordinances? I'll have to ask --

MR. KLEIN: I think Monterey. Which is not a bad strategy. Some people say over so many feet away, things like that. So, in any event, it has potential to increase energy use, and I think we have to be careful of that.

MR. TRASK: Okay. Well, in the interest of time here I think we need to press on, although

I think it's still a fascinating topic.

Water-free urinals. What do they use instead of water?

MS. DICKINSON: They have a -- it's a liquid that's in a sealed trap. So because the urine is lighter -- heavier than the liquid in the trap, that's the seal instead of the S bend in the plumbing. And it's an organic fluid that has to be replaced.

So although there's no water and no crystallization in the plumbing, you still have to replace these cartridges. They have to be constructed. And so there's probably an energy consumption output there --

MR. TRASK: I'll put slight potential.

MR. KLEIN: Well, there's a fair amount of transportation energy in getting them in and out of the urinal. I mean someone's got to show up and put them in, and someone's got to take them away and --

MS. DICKINSON: Right, well, they can be shipped.

MR. KLEIN: Understand, but it's --

MR. TRASK: They already have somebody putting those little cakes in there, so --

MR. KLEIN: Yeah, well, it's a choice.

MR. TRASK: You know, I never thought we would get on to this subject. Okay.

What did you call it, not a membrane but a --

MS. DICKINSON: It's a seal. It's a cartridge. You have to replace the cartridge.

MR. KLEIN: It's not to seal the cartridge, it's the --

MS. DICKINSON: It's a blue seal is the material within the cartridge.

MR. TRASK: Right, it's just the cartridge is the --

MS. DICKINSON: But you have to keep replacing --

MR. TRASK: -- the seal.

MS. DICKINSON: In one model you have to replace the whole cartridge; and another model you keep pouring in this blue liquid. So it depends on which model, but in any event it has to be maintained. And they say, oh, the plumbing staff can maintain them, but there have been stories. You pour water down it and it breaks the seal, and then everything falls apart.

MR. TRASK: Artificial turf. Obviously

it takes energy to make that turf. But compared to the energy of a lifetime of real turf it's got to be minimal.

MS. DICKINSON: It also absorbs heat. There's stories of kids' sneakers melting.

MR. TRASK: On the artificial turf -- well, a lot of energy to --

MS. DICKINSON: So the turf sometimes has to be hosed down --

MR. TRASK: -- repair those sneakers.

MS. DICKINSON: -- to cool it off.

DR. McMAHON: Yeah, that's a good one. Art'd love that project.

MR. KLEIN: Sorry, we don't need to see another PIER project --

MR. TRASK: Dual flush toilets. Nothing there. Landscape retrofits. Again, --

MS. DICKINSON: That's changing out the amount of turf and planning appropriate vegetation that uses less water.

MR. KLEIN: What about the energy in the hardscapes?

MS. DICKINSON: That doesn't mean it has to be hardscape.

MR. KLEIN: No, I know, but -- okay.

MS. DICKINSON: I mean mostly it's different types of plantings and mulch and -- I mean we actually discourage hardscape, because that would be worse. That reduces infiltration, it creates a heat island and make the rest of the soil hotter, and no, we don't want --

MR. KLEIN: Sorry, I just saw a product yesterday which is permeable concrete for hardscape.

MR. TRASK: You watched the same HGTV program I do.

MS. DICKINSON: Inland Empire has got it.

MR. KLEIN: No, I was at a conference, but --

MR. TRASK: Oh, it was on HGTV last night.

MS. DICKINSON: Inland Empire's got it all around their building. They've got -- their the first platinum lead building that's a public building in the country, I think. That's what I heard the last time I was there, that it's in the country. The first public building that's gotten the lead platinum rating.

MS. PARK: I think the Audubon Society

has, I guess they're not considered public entity, yeah --

MS. DICKINSON: Public building, yeah. Public agency building is what I meant to say.

MS. PARK: We should get their specs. I mean it's really quite impressive.

MR. TRASK: So I just put down here the obvious that if you do go to drip you will increase your energy use.

MR. KLEIN: Why?

MR. TRASK: High pressure drips for the vast majority of the type of plants will definitely increase energy use, going from a --

MR. KLEIN: Compared to the --

MR. TRASK: From either the spray or gravity. For the urban there is no gravity feed, as far as I know. But, yeah, compared to spray it's much higher.

MR. KLEIN: So, I'm --

MS. DICKINSON: It depends. If you're putting drip on plants that need less water to begin with, and you ripped out plants that needed constant --

MR. TRASK: Right, yeah.

MS. DICKINSON: -- irrigation in the old

system, you still could be a net --

MR. TRASK: If you were over-watering --

MS. DICKINSON: -- it could be a benefit in --

MR. TRASK: -- to begin with and --

MS. DICKINSON: -- the energy column. It really is very site-dependent.

MR. TRASK: I'll put that just can be. Drip irrigations -- so a mixed bag there.

Hot tubs. Steam tables, what's the alternative there?

MS. DICKINSON: Well, just food steamers in general. I didn't think we had food steamers on there, but --

MR. KLEIN: Isn't there a bunch that work at the Food Service Technology Center that's looking at that?

MR. TRASK: And what's the alternative? How are you saving water --

MS. DICKINSON: No, you just -- there are steamers that use less water, but then the question, I guess through pressurized steam, or I don't know how the technology is, but CEE is putting together this commercial kitchens initiative with the Food Service Technology

Center, and food steamers are something we're going to look at.

MR. TRASK: And is there potential there for increased energy use by those --

MS. DICKINSON: No, I don't think so. I think it would be --

MR. KLEIN: It appears to be a net win on both sides.

MS. DICKINSON: Yeah, yeah.

MR. TRASK: And when recycling water, obviously it takes a lot of energy to recycle that water, to produce, to build and operate your tertiary treatment plant. But most cases they have to do it anyway, right.

MS. DICKINSON: Yeah, and I think in the energy down the drain report they did the numbers on it. I think they think it's still a net benefit energywise.

I don't think Gary's on the phone, are you, Gary?

MR. TRASK: No, he had to leave.

MS. DICKINSON: But I know that's one of their recommendations, so I suspect it's because they found it to be a net energy benefit.

MR. KLEIN: It seems to me that if the

regs are getting it tighter and tighter on the water quality requirement before you can put it back into the environment, then you're sort of a tertiary treatment in an awful lot of cases, you're just saying sort of have to do it anyway.

MR. TRASK: Right.

MR. KLEIN: And so the margin costs of the recycling is just to repump it. You have to deliver water somehow --

MR. TRASK: Often they're just pumping it to the stream or the bay or whatever. So, okay.

MR. KLEIN: We should take a short break, right?

MS. DICKINSON: Yeah.

MR. TRASK: Should we? Yeah, let's do that. Be back at 3:30?

MR. KLEIN: That's a long break, but, yes.

MS. LEWIS: That's a long break. Yeah, five minutes is good.

MR. TRASK: Well, when you look up and see half your participants are gone, anyway, it's --

(Laughter.)

(Brief recess.)

MS. LEWIS: We want to get through our questions quickly.

UNIDENTIFIED SPEAKER: Before tonight? Quickly.

MS. LEWIS: Yes. Well, we're going to --

MS. DICKINSON: We need a gavel.

MS. LEWIS: Okay, so we have talked about the strategies that increase -- that could potentially increase energy use. Let's look at the proposed strategies.

MR. TRASK: Yeah, just a little bit of a preface, just from talking to people here at the break.

You know, again, we're an energy forum. This report is aimed at energy issues in the water sector, rather than the other way around. So, I do want to make sure that we put more emphasis on programs that are clear energy savers, or clear energy wasters, rather than ones that the energy connection is not so clear.

MS. LEWIS: Okay. So the next thing we want to do is take a look at this list and we're going to do it much more quickly than the last

one. And to identify some of the top savers of peak energy use.

MR. TRASK: So again back at the top? Or should we just -- well, we'll go through it quickly.

MS. LEWIS: Let's start at the top and go through these quickly. Lon has already done this for a number of these. But --

DR. McMAHON: Can I make a procedural suggestion?

MR. TRASK: Sure.

MS. LEWIS: Yes.

DR. McMAHON: Rather than going through the entire list, maybe we can just ask people's impressions of what major peak savings things are, and then mark them on the list.

MR. TRASK: Sure.

MS. LEWIS: Right, and that's what I mean. I don't mean to go through --

MR. TRASK: Like, what's your number one peak --

MS. LEWIS: -- them one by one.

MR. TRASK: -- reduction option or idea or program.

DR. HOUSE: I would say that number one

is storage utilization, existing storage utilization.

DR. NEWMARK: What number is that?

MR. TRASK: I think it's down on the proposed --

MS. DICKINSON: It's down on the next list. It's down in the conveyance list, I think.

MR. TRASK: Oh, that's right. The mouse here is not working too good.

DR. HOUSE: That's item number two on the list there. Is that what you're thinking?

DR. NEWMARK: What are we doing right now?

MR. KLEIN: We're going back through and doing peak.

MR. TRASK: We're kind of ranking our peaking, the ideas that address the peak load, and rank those as --

DR. NEWMARK: (inaudible) energy.

MR. TRASK: Right. Water programs that reduce energy peak load.

MS. DICKINSON: Are we defining peak as day only, or seasonal, as well?

MR. TRASK: For the electric system, yeah, we only care about hot day.

MS. DICKINSON: Okay, so that's the same as the peak in the water world. So I would say the number two would be landscape irrigation efficiency. Because that's the biggest strategy on the user end that's going to influence peak.

MR. TRASK: And --

MS. DICKINSON: On the residential side.

MR. KLEIN: Any landscape, right? I mean, --

MS. DICKINSON: Any landscape, yeah. The reason I say residential is that I'm not sure which is more efficient for peak, doing something with industrial commercial energy usage or getting at the landscape, because I don't have the figures for the -- I mean I suspect industrial and commercial energy usage is very high. And so moving some of that to offpeak might have some terrific benefits. I just don't have the data to know; it's just a hunch.

MR. KLEIN: I can't wait to see parks and rec try and water their fields while people are playing on them, so they tend to be offpeak already in the big irrigation stuff.

MS. DICKINSON: Water them at night.

DR. HOUSE: The problem also is that a

lot of the -- particularly in the urban areas, it's already done offpeak. Golf courses, it's all done offpeak.

MS. DICKINSON: Well, that's all recycled water for the most part. A lot of it is.

DR. HOUSE: Yeah.

MR. KLEIN: But from an energy use it really doesn't matter where it's coming from. It's still got to be pumped there.

DR. HOUSE: So I would actually make number two a little bit broader. And I'm not sure how you want to put this, but I would do, which is time-of-use customer end use. And I don't know whether you want to put time-of-use water meters and tariffs, or whatever that is.

But it would be time-of-use customer water use shifting.

MR. KLEIN: Yes, right. Shift customers water use offpeak.

DR. HOUSE: You know, I think the only way that you're going to do it is with time-of-use meters and water tariffs. But, I mean you could -- you may get some response from public relations and, you know, things like that, but --

MR. KLEIN: Isn't ag a special concern

there, agriculture?

MR. TRASK: Yeah, we'll put in agriculture.

DR. HOUSE: And the third one I would probably put down as nonelectric pumping. I think of it as limited natural gas, because we have all the problems with diesel. But nonelectric peak pumping.

MS. LEWIS: So we actually have four items now. You've mentioned the storage, and then the strategies involving landscape irrigation --

DR. HOUSE: Well, what I did is I sort of subsumed that under customer time-of-use shifting.

MS. LEWIS: Okay.

MR. TRASK: I have natural gas engines in here somewhere.

DR. HOUSE: You passed it.

DR. McMAHON: 22.

DR. HOUSE: And those are all three with the exception of the time-of-use are -- two of them, are currently being -- are current options that are available. And there is, as you're talking Mary Ann, there is landscape efficiency ends up translating into, to some extent, into

onpeak changes, if they use water in the onpeak period.

MR. TRASK: Right. So, I have it down as irrigation retrofits. So part of them would be shifting from day to night use, as well as upgrades in hardware.

Okay.

DR. McMAHON: I think another one is cooling towers.

MS. DICKINSON: How would that be a peak?

DR. McMAHON: -- think you're using more cooling during the peak.

DR. HOUSE: But I suspect that --

MS. DICKINSON: I'm sorry, I think of it as a constant 24-hour thing.

DR. HOUSE: -- that the energy use associated with cooling towers is pretty small compared to these other three.

DR. McMAHON: You're probably right.

MR. TRASK: But water use, if you went from an open system, an open -- closed system -- sorry?

DR. NEWMARK: You're mixing apples and oranges. You're talking about peak energy

consumption which are the worst energy consumers, and you're talking about something where we're trying to clean up cooling towers. I don't see that that's a huge -- you're talking about the use of cooling towers and cooling tower -- you just said they're probably working hardest when they're during the peak. That's not what that bullet was about.

MS. DICKINSON: I think it was. Cooling tower maintenance is about making sure that your cycles of concentration are lower, using less energy, and achieving the same cooling effect with less water and less --

DR. McMAHON: Well, it might not have been that one. It might have been a different bullet. I know cooling towers were in there somewhere.

MS. DICKINSON: Yeah, I think that's what it was.

MS. DAVIS: This is Martha Davis; I've just rejoined you.

MR. TRASK: Hey, Martha.

MS. LEWIS: Okay.

MR. TRASK: We're listing our top ten ideas for electric peak reduction in the water

sector.

MS. DAVIS: Okay. I think on the webpage, we're up to number 29?

MR. TRASK: Well, we're kind of going back and forth, since we're -- first we listed all the ideas present and future. Now we're going back and kind of considering the energy implications of those ideas.

And we started with just overall energy use. And now we're looking at peak energy use. And there we were looking primarily at optimizing the storage system in water systems. And then landscaping retrofits, changing the time that it's used, that kind of thing, was probably number two.

MR. KLEIN: Lon, you may know this better than anyone here. The DWR system, the big state project, the big federal project are shipping water 24 hours a day. Is there any ability to shift some of that usage offpeak?

DR. HOUSE: We took a run at it a couple years ago on the Friant-Kern Canal. And everybody sort of thinks there is, but it'll change the way the Canal is operated.

And what you'll do is you'll get daily fluctuations. But the answer is yes, it is

possible. But it is not something that was, you know, a high enough priority that people were really willing to do that.

And it's not primarily, but the biggest impact will be on agriculture. I mean you guys, you'll just go away with if I'm a farmer I schedule water on a 24-hour basis. And I have to take equal amounts each hour for that 24 hours. Which means my water agency has to schedule water on an equal amount for 24 hours from DWR or it's Met or the Bureau.

And so there's limits on what you can do. If you're in a situation like that you have to -- you just got to run things during that period of time.

So, I mean, but this is something that's a little longer and it will require some work. It has to do a lot with the engineering and the water and the dewatering stresses on the Canal.

MR. TRASK: Right.

DR. HOUSE: But it is, from people that I've talked to, they say it is possible. But it was never -- it is still much easier just to stay the way it has been for 100 years or so -- 75 years. Just do it on a 24-hour basis, because

that's the way the irrigation is set up, and that's the way everything is set up.

MR. KLEIN: If we were to do it, would it make a -- is it a big enough number to pay attention to?

DR. HOUSE: I --

MR. KLEIN: In the scheme of what we're talking about --

MR. TRASK: I'm going to say no. Just because the State Water Project is only about 5 percent of the energy use in the water sector.

I mean it's the biggest number one energy user, yes.

DR. HOUSE: Well, but what you've got is -- and the way we got to this is working with East Side. And they've got probably 5 megawatts of pump -- they've got 215 megawatts -- 2.5 megawatts and 2.5 megawatts in these big pumping banks.

And they turn them on and run them when they need the water, when they order the water. And they're saying that if we could order it and get it so that we could shut off in the afternoons, we could shut off a significant portion of those pumps, you know. Because it's agriculture and they don't have any storage.

So, from the -- because these are just big canals that go down -- you've seen them, they just go down. And to get water out of them you got to pump it up out and over. And in almost all cases it goes into a pressurized system.

So, there's a potential for some, I don't know how much some is, but there's a potential for reducing onpeak electricity usage if you were able to schedule your deliveries out of the onpeak period.

But that will require coordination with multiple entities. Like I said, everybody has said it is do-able, but there wasn't either the financial or the political impetus to do enough analysis, to convince them that they were going to change the way they operate their system.

MR. TRASK: It would certainly be an operational challenge, to say the least, because you have so much of a time delay between the time they let the water go out of Oroville and the time that it gets down to its customer.

Well, there you're just pumping -- I'll change that. The time between you pump it out of the Delta in the State Water Project and the time it gets down to the customer. I assume that's a

fairly well known time, but you know, if you're going to schedule your water deliveries such that it only gets to the person at night, then you're probably going to have to be pumping it in the day.

And, I don't know, it just seems like it would be a very difficult engineering and scheduling challenge.

MS. PARK: I'd like --

MR. TRASK: Go ahead, Laurie.

MS. PARK: As Matt knows, what I'd like to offer I've been trying to bring into this process, Ray Hart, who is a former Deputy Director of DWR, for many years. He knows the operations extremely well.

And he and I have been talking about understanding how much operational flexibility there is in the project. What he said to me is that primarily the largest pumps already operate only offpeak.

And so, you know, a significant portion of the load has been optimized. There are some tweaks that are possible, most of them require some system modification.

And it would probably be beneficial to

have that conversation.

MR. TRASK: Yeah, when --

DR. HOUSE: Well, remember, DWR is only a portion of the deliveries. It's the Bureau that supplies almost all the ag guys.

So you look at one of the big canals that's going down south, and you look at everything that's over on the east side, that's all Bureau.

And they operate a little differently. And they're the ones that in my initial discussions I had given up on convincing or working with DWR to get them to do it, schedule deliveries different. We were working with the Bureau.

And those are some guys that you guys have never talked to before. They have never been involved in this process. And they're big energy users.

MR. KLEIN: So, are they roughly the size of DWR for movement of water?

DR. HOUSE: As I recall they're larger than DWR.

MR. TRASK: Yeah, they're a little bit larger. They don't use as much energy. They're

much more of a net energy producer because of all the hydroelectric dams. But, yeah, they --

MS. DICKINSON: What's the furthest south CVP water goes with Bureau water?

MR. TRASK: Oh, way down, past Bakersfield.

DR. HOUSE: It goes down to the Tehachapis.

MS. DICKINSON: And so it goes all the way to the Tehachapis, but it doesn't go over the Tehachapis?

DR. HOUSE: Does not go over.

MS. DICKINSON: Okay, so it's --

MR. TRASK: Yeah, it's primarily gravity fed. I only know of one big pumping plant that they have.

MS. LEWIS: Now, on this list, are there any other major peak energy reducers in this list? If not, we're going to go on.

MS. DICKINSON: Did we talk about commercial and industrial process?

MS. LEWIS: I don't think so.

MS. DICKINSON: I think that, you know, that's a lower down than what we've been discussing, but I think we need to flag that as a

potential, as an unknown and possible great potential.

MR. TRASK: That was that CII thing. Where did that go?

MS. DICKINSON: Yeah, that goes up above.

MS. LEWIS: Okay.

MS. DICKINSON: But it's in a number of places.

It's the once-through cooling. You know, it's number 9, it's number 18. If you have another one down below that talks about process changes, it's that one, too. It's all those together.

MS. LEWIS: Okay.

MS. DICKINSON: So there's number 18; and then there's one for --

MS. PARK: Mary Ann, I think what you're describing kind of indicates that as far as establishing kind of a framework for looking at these measures, categorizing them by types of measures would be helpful.

So, for example, when I look at 9 I think about Lon's suggestion on storage. Certainly that could apply to industrial, as well.

But the principle is storage, not industrial.

So we might --

MS. DICKINSON: Yeah, no, I'm thinking of Lon's suggestion being separate. Yeah.

MS. PARK: Well, I was thinking about making it --

(Parties speaking simultaneously.)

MS. DICKINSON: Were you talking about like onsite storage for industrial?

MR. TRASK: Yeah, exactly.

MS. DICKINSON: Oh.

DR. HOUSE: And further down the list, but I would also, you need to put in there what I call peaking efficiency, which is scheduling and things like that.

Because the estimate that we use, whenever we go into a water agency, we assume that we're going to get 15 percent or greater reductions in electricity use, just through the optimization of their pumps.

And so that's a number that we -- we usually end up getting a lot more than that. But that's just a number that we typically walk in with, which is 15 percent reduction in electricity use by pump optimization.

MS. DICKINSON: Well, why wouldn't we want to require these kinds of audits on all water agency operations? Make sure that one is done for every water agency in the state.

MS. DAVIS: What type of audit?

MS. DICKINSON: A water system and pump optimization, so you're optimizing your flows in your systems, you know, to avoid peak impacts.

DR. HOUSE: Well, see, I don't know how you would do that.

MS. DICKINSON: You mean how you would require it?

DR. HOUSE: How you would require it.

MS. DICKINSON: You're sitting here in a regulatory --

(Laughter.)

(Parties speaking simultaneously.)

MR. KLEIN: -- we have some evidence of nonregulation either.

MS. LEWIS: Okay. I think we can segue then into the next discussion.

What I'd like to talk about is barriers to moving forward on these top strategies as the last topic for us to take on today.

MS. DICKINSON: Money, money, money,

money.

MS. LEWIS: So, let's talk about that. Shall we take them one by one or as a group?

MR. TRASK: Well, let's --

MS. DICKINSON: Barriers. Money, lack of data.

MR. TRASK: -- gone a ways to help us out on this.

MS. DICKINSON: It's Martha; she's busy on her keyboard.

MS. DAVIS: (inaudible).

MS. DICKINSON: You multitasker, you.

MR. TRASK: This is DWR's advanced publication of their latest update, 2005 update to their water plan. And in it they identified this nice little table here. It's sort of implementational challenges which is the same thing as what I'm calling barriers.

I'll just flash that up there. And it does seem to pretty much cover the basics as far as those type of barriers that apply to almost all programs.

Then I also have -- this is something I found very interesting, because the Energy Commission does not do this.

Here's something that DWR is doing. They go through every single possible program that they could look at, starting here with agricultural water use efficiency. And then they consider what that means to all of these categories here on the top. Water supply benefit; drought preparedness; water quality; flexibility; efficiency; energy benefits.

So I think what I'm going to probably try to do for the purposes of this study is develop a kind of similar table. But focus more, or pretty much solely on that energy/water connection so that we can more thoroughly look at energy implications.

But I think there's also other things to consider. Mary Ann, you were talking about, sort of, how do we win the hearts and minds of people, you know, the type of programs that are -- that the public can get behind.

I was talking with Kae about this during the break. I was amazed during the power emergency of just hearing people at the water cooler talking about what they're doing to reduce energy use in their homes, you know. One you've really reached that level of awareness where, you

know, people are actually talking among themselves about what can we do about it, then you really start to get results, much as what happened during the power emergency.

MR. KLEIN: So, Matt, you might want to actually start with this table and look at the energy implications and the peak implications of what the water folks already think they think they ought to be looking at. Because that talks a lot about it.

You know, some of the areas look like they could be expanded, like urban water use efficiency. We know we can do a whole bunch more to add to that particular thing, to look at the end user issue.

But it seems that they've covered the ground from the water side and we ought to at least use that as a starting point to assess the energy implication.

MR. TRASK: Right.

DR. HOUSE: And if you're looking at doing things, I'm not a big fan of public relations, because I think it's real soft. And all of these claims of energy savings associated with them are really soft.

But, I think that it would be very interesting; I think you'd have a really good public relations push for this summer for the citizens in southern California to realize how much electricity is used to produce their water. Because they don't, you know, they don't know anything. For all they know it falls out of the sky, and it costs them so much on a monthly basis.

And so this would be a push that I think would be very informative. And you may end up getting some response, just say, look, for every gallon of water that you don't use, it costs this much to ship it down here over the Tehachapis in terms of energy, and it costs this much to process it and send it to you guys, and it costs this much to treat it after it's done.

Because this is something that I'll bet you everybody doesn't know about, and they never even think about it. So if you had a program, you know, like Flex-Ur-Power, or whatever those little catchy phrases are, down in southern California, you may end up with the conscious people actually making some changes in the way they use water. Because they're thinking about it in terms of energy, not just in terms of the cost of water.

MS. DICKINSON: Well, the Flex-Ur-Power folks are interested in working up some joint messages. They've already indicated that. We did one campaign with them last August on a combined washer, you know, energy/water message.

And, you know, they're always looking for more opportunities. So I think we could put together something targeted and I think they'd go with it.

DR. HOUSE: Well, I think that if you are concerned about doing something for this summer, this would be something that actually, Mary Ann, would be great coming out of your shop, which would be starting a public relations program in May or June that just says, hey, southern California, these are how many kilowatt hours of electricity required for every glass of water that you drink. And so conserve water, and it will end up helping us through the electricity crisis for the summer.

MS. DICKINSON: We'd have to do that in conjunction with Metropolitan because they're very possessive over their turf.

MR. TRASK: Well, I think --

MS. DICKINSON: But I'd be happy to do

that.

MR. TRASK: -- there's a barrier right there, is --

UNIDENTIFIED SPEAKER: Metropolitan's a barrier.

(Laughter.)

MR. TRASK: Well, they may be the solution to the barrier. I'm going to say Metropolitan may be the solution.

MS. DICKINSON: No, no, no, they're not a barrier. We're just teasing, no, no. Metropolitan will be --

MS. DAVIS: Mary Ann is getting tired.

MS. WHITE: The word gorilla did come out, though.

(Laughter.)

MS. DICKINSON: Metropolitan will be happy to do this, I'm sure.

MR. TRASK: She was talking about gorilla marketing techniques. That's what it was.

But I think that is a huge issue. I think MWD has a big advantage in dealing with their 29 or whatever it is, wholesale members, because they can get a huge geographical area to buy into a program.

MS. DICKINSON: And they've got a big landscape education program going on right now.

MR. TRASK: Right, and your group, too, Mary Ann, you know, you have a statewide focus, whereas, you know, the City of Anaheim or City of Burbank can only do their city. And if you're administering a project, obviously the smaller number of customers that can go to that project, the higher the administration costs.

MR. KLEIN: It seems to me that the water agencies south of the Tehachapis would be the right ones to be involved given the marginal cost of moving all that energy down there.

MR. TRASK: Um-hum, well, shifting --

MR. KLEIN: Water.

MR. TRASK: -- back to bang for the buck, when you look, and I wish I had these statistics, when you look at water use, water supply in the state, the State Water Project is, without doubt, the number one energy user in the state. But they still are only 5 percent of the water supply in the state. CVP about the same amount.

It's those, I call them the mom-and-pop water agencies out there, the ones that are every

little town in the state, that's where the big water use and the biggest savings potentials are, at least in my mind. I mean in my --

MS. DICKINSON: Well, in Bob's study, Bob Wilkinson's study, he showed that almost 70 percent of a municipality's energy bill is water and wastewater related. So I thought that was a pretty telling figure, too.

MR. TRASK: Right. So if we're going to look for energy savings, peak load reduction, I don't think we're going to find it in the State Water Project. I don't think we've going to find in the CVP. I think we will find it in every single little municipal water agency in this state.

MR. KLEIN: It seems to me then we need to look at a coordinated strategy of both end use from -- let's look at the municipality that supplies the water and the wastewater treatment. If that's 70 percent of their bill, that's --

MR. TRASK: And getting higher.

MR. KLEIN: Whatever that is, it is. So we need to be looking at end use efficiency of their customers and efficiency of operations of them as users. Right? We have to do both of

them. And doing both gets huge huge benefits, much bigger than doing one or the other.

MR. TRASK: Just out of interest in accuracy, 75 percent would be more their variable costs. Their fixed costs are definitely still higher. And I'm talking about personnel, --

MR. KLEIN: Understand, --

MR. TRASK: -- primarily.

MR. KLEIN: -- that's fine. But for --

MR. TRASK: Yeah, it's still a very large portion of the money that's going out, and it's definitely going to get larger starting this summer if they're served by an IOU.

MS. PARK: What I don't know, though, is how much of the energy usage is for ag? Do we know? Out of the water-related sector.

MR. TRASK: Well, a lot.

MS. PARK: You know, it just strikes me that, you know, when we were in the big drought and we had all of the water conservation measures we focused heavily on that which we thought we could influence, which was the end users; but they were the residential and the commercial/industrial end users, and not so much the ag, because that required a real changeout in their, you know,

practices and their systems.

And I always keep going back to that and wondering, you know, if we did the 80/20 rule, how much would ag account for of that.

DR. HOUSE: And that's something that I'm supposed to produce sometime, that information. You can't use the 80/20 rule because the ag was developed first. And it was developed using gravity.

And so my inclination is that the urban areas use a lot more energy per water, and we know that, than the ag guys. Now, I don't know how much more. But, I mean, if you think about the ag guys, the ag development was developed a lot in the Central Valley or in Imperial back, you know, 50 years ago, 40 or 50 years ago. And it was all done using gravity, or primarily using gravity.

And so if you want to really impact the electrical use, I think you still want to concentrate on the urban areas.

MR. KLEIN: So to look at that a little bit, when I first got to California in 1989/90 we looked at this question of energy use by sector. And if I remember right ag, in energy terms, is about 3 percent of the state's energy use.

Now, that's combined all over the place. And I don't remember if that included process industries or not. I'm not sure what's broken out. I can find out --

MR. TRASK: That seems a little low if you included all food processors, because --

MR. KLEIN: It seems low, right. So I think it was just ag, field ag. And that includes the transportation energy. We tried to put it to ag. So it really wasn't -- it's a definable number, 3 percent is bigger than something we can't see. But it's hugely spread out.

And in the water area I think Lon's right, that the systems, for the most part, a huge percentage of the systems were developed to be delivered by gravity. The issue then is the pumping.

(Parties speaking simultaneously.)

MR. TRASK: And even where there's pumping there's generally a lot less of an elevation for ag than everybody else.

MR. KLEIN: So one of the things we should be talking with SemiTropic about when they come to present to us, is that they're using their aquifer as storage. And when they bank water for

somebody else who doesn't use it yet, they actually reduce the energy consumption of their pumps. Because the aquifer is higher. If they raise it 15 feet they have 15 feet less of head to worry about. And that turns out to be a pretty big deal to them.

MR. TRASK: Well, I may be overstepping myself here, but I pretty much have decided for the purposes of my report the ag sector is not really an issue. Their energy use is not -- it's not lost in the noise, but there's not a lot that can be done that hasn't already been done that would help out the electric system.

You can do some --

MR. KLEIN: I'm not sure --

MR. TRASK: -- peak shifting.

MR. KLEIN: Peak shifting, huge, right, Lon? I mean, I think that you're thinking that that's what you're going to see when you go through with your storage.

DR. HOUSE: Well, again, the problem with the ag sector is that it's flat in almost all cases. It's flat, except for some of the vineyards that are now going in. And they don't have any storage. You don't see big water tanks

around for them.

And, again, they were developed on the 24-hour basis, so the customer orders water on a 24-hour basis even for the vineyard or for irrigation and things like that.

So the ability to shift out of the onpeak for ag, I think, is really minimal. It is the urban areas in which you've got end use customers that you can shift, and you have all of this storage sitting up there, because you've treated the water and, you know, it can't be exposed to the air for that. So you've got all these storage tanks that are sitting up on the top of the hills all around that you can use.

MR. TRASK: Plus, looking at the future, I don't see a lot of growth in energy use in the ag sector. I see it the other way around. Just because they have water and probably more than they need, which is also, I know, a controversial statement. But they'll be selling a lot to urban users.

MR. KLEIN: Remember you're being recorded here.

MR. TRASK: That's right.

(Laughter.)

MS. DICKINSON: Yeah, them's fighting words you just uttered.

MR. TRASK: And I should remember I'm surrounded by farmers where I live, too.

DR. McMAHON: But I think the question there is groundwater pumping in a dry year. I agree with you that in terms of energy on an annual basis, ag is not a big contributor.

But if you start talking about peak, it depends, but if you have a dry year and you have a lot of pumping going on, it may be a big deal.

MR. TRASK: Right. As the aquifers go down there will be increased pumping, increased siltation which will further complicate the energy picture.

MR. KLEIN: So it seems to me that even though they're not a big issue, per se, all of those things that look and act like pumps seem to be in an area that we ought to explore improving efficiency and sort of buying us insurance, if nothing else, --

MR. TRASK: Right.

MR. KLEIN: -- and lowering people's bills in the meantime.

MR. TRASK: But when I look at bang for

the buck, --

MR. KLEIN: Yeah, I understand.

MR. TRASK: -- I don't see a lot of bang in the ag sector.

MR. KLEIN: Not from the state's energy perspective, but from their customer perspective I bet it looks pretty good to fix those pumps.

MR. TRASK: Oh, yeah. And to water agencies, to save that water.

MS. LEWIS: These particular peaking opportunities, we're talking about the barriers to them. And, Mary Ann, you said money.

MS. DICKINSON: Money and lack of data. When I think of global barriers to these measures that's what I think of.

MS. LEWIS: Okay, --

MS. DICKINSON: There's not enough money to implement and we don't have enough data to always make the right decisions.

DR. HOUSE: And I would add the third one, which is technical expertise. Because you just get -- I mean that's why ACWA set up their technical assessment program is because it requires a specialized set of information and knowledge that is not generally found.

MS. DICKINSON: Yeah, that's --

DR. HOUSE: And I think along with your money issue, I think a subset of that is the cost effectiveness issue, because a lot of the changes in -- you could do operational changes, and operational changes still cost you money because you have to have more sensors and more valves and more personnel.

But if you're going to make any big changes like, Matt, you were talking about, the problem that we've had in the water industry is that you'll see these tariffs come and go, or incentives that will come and go. And one of the real problems is the water agencies have been burned by putting in peak shaving somethings, the hardware. And then having like the demand reserve partners that was run through the PX.

There was -- a bunch of money was put in to be able to participate in that, and it operated one year and then they completely changed the rules on us.

So one of the things I think you need is you need some sort of constancy so that if something happens and a new tariff comes out, you know that you can do something to participate in a

demand bidding tariff, for example, and know that you're going to get the savings for the next four or five years.

Because if you only can do it for one year, and that's the horizon that you've got, you know, the water agency has required capital investments in most cases to make some sort of a switch.

And the time horizons that most of them have to look at now is just one year. Because that's all that you're guaranteed that this tariff will be in existence. Because the tariffs are continually being yanked around.

So part of what we've talked about in the working group, if for the demand options, is giving them the ability to participate in a tariff and they know that they can be on that tariff for the next five years. And so then they can amortize whatever capital investments they have over the period of time to make it cost effective.

MR. TRASK: Sure, and so regulatory certainty is more or less the issue there. I mean perhaps the biggest barrier is institutional resistance. And institutional resistance comes from lack of experts; it comes from getting burned

before on going after a program that didn't go anywhere.

That's something that definitely I think the Energy Commission probably could help out, is just to make sure that whatever tariffs are applied people know the rules of the game throughout the whole game. And they aren't changed on them.

MS. LEWIS: Does this happen with conservation programs in general? Within the BMPs are utilities changing programs year after year, and not providing this constancy that he's talking about? Or not?

MS. DICKINSON: I think it's different from utility to -- water agency to water agency. There are some water agencies, like LADWP, that have had some of the same consistent programs for the consumers for years, years and years.

And then others start up and then stop, you know. So it really depends on the commitment of the water agency.

DR. HOUSE: And I think it's different for conservation versus demand response. You know, with conservation I think that there's a little more constancy, because you're sort of

always, I mean conservation has been in part of the utility resource plan since, you know, some of the NRDC stuff back in the '80s.

But, peak is what is the real -- the thing that's occurred in the last what, four or five years. And that's the thing that we're just continually getting jerked around on. You know, the rules change and what you get credit for changed. What you get paid for gets changed.

And it occurs from year to year, and so a lot of the water agencies are gunshy. Even looking at this critical peak pricing tariffs, you know, one of the questions I asked, is this for this summer or is it for more than this summer. And I can't say if it's even going to be for this summer.

But if it's for this summer, the idea is sort of, well, you know, we'll just sort of ride it out and we'll use our reserves. If it's something that's going to be from here on out, then we're going to look at some changes in our system.

MS. DICKINSON: Yeah, it's the shotgun approach that's the problem. If a water agency decides it's going to do conservation or demand

management, just because this year there's a drought, it's the same thing that Lon was talking about on the energy side. Then it creates an impetus or an emergency response just for that one period. And then they slack off and they don't maintain a consistent behavior.

So, it depends on the agency.

MS. DAVIS: I think Metropolitan Water District, with their two-tiered, tier one, tier two pricing structure, has created quite a bit of incentive for agencies that have the growing areas, to have a very aggressive conservation program. Because there is a very clear price signal that's being sent that if you can stay on the tier one side of the bubble, you'd save a lot of money for your customers.

MS. DICKINSON: Yeah, that's very true. But then you've got Central Coast Water Agency that sent me a letter that I got today that said they're withdrawing from the MOU because it's rained now and they don't have a need for conservation.

MS. DAVIS: You really have to -- it's very variable across the state as to what the driver is, and how they perceive the value of --

MS. DICKINSON: Yeah, I'm --

MR. KLEIN: I think that there's another dilemma that we're talking about here is that there's two sets of folks looking at the problem that we're discussing.

You've got water agency folks with their own programs. You've got water and energy folks with their own programs. And we're talking about a coordination of two different types of entities. And I think that that's one of the big barriers in this particular discussion is that it's going to require a bit better coordination than any of us are used to having.

The energy folks have to be willing to talk more with the water folks so that we have stuff that makes sense for long-term infrastructure development.

I also think in the new areas that I just heard on the phone, that there's an incentive. But one of the things I keep hearing about is that it's a real problem to put certain water efficiency measures in at time of construction. Because --

MS. DAVIS: (inaudible).

MR. KLEIN: And yet there's lots of

energy programs trying to do that. I'm not sure they're doing it all too well. But maybe we ought to look at water and energy stuff at time of the new construction, particularly given that we're going to grow 30 or 40 percent in the next 20 years. So we ought to do that.

MS. DAVIS: That's absolutely true, and again, the Metropolitan Water District has tried to at least address the water side of that equation with their California-friendly program, model home program. Trying to carry it into the production home.

You have a cachet that is emerging for new development in California, when they can tell their customers that it's water and energy efficient. So it becomes part of the marketing device for the new construction.

But they still need a stronger way of certifying or recognizing those developers that are going the extra distance on energy and water conservation, and those developers who are not.

MR. TRASK: We can paste stars to their foreheads or something.

MS. DAVIS: Well, actually what's interesting about it is that I think it really

comes -- I think Met is on the right track of trying to work with the developers early so that it's integrated not only into the construction but it becomes integrated into the marketing program.

So to have Lewis or Eastern, they're both participating in the -- we're participating and Eastern's participating in a program. Lewis' is the first California-friendly homes, as supplied by Met in California. Eastern will have the first California-friendly neighborhood.

The more that stuff gets integrated in the front end into the marketing package, we get what we want out of it in terms of construction that is water and energy efficient, and they get a competitive edge in the market.

MR. KLEIN: So, doesn't this even transfer further back in terms of land use planning? If we're talking about this new stuff, I know from the energy perspective that if we don't see a community while it's still being laid out where the streets are supposed to go by the municipality that does the land use planning, and that's 15 years or so in advance of construction, if we miss that window there's a 30 to 40 percent increase in energy consumption in the community.

That's a big number.

MS. DAVIS: That's a huge number.

MR. KLEIN: And it's like okay -- we have a real problem back up --

MR. TRASK: Maybe we should have an energy element in every general plan.

MR. KLEIN: It has been thought about.

DR. NEWMARK: On the water side I think somebody mentioned --

MS. DICKINSON: An energy and water element.

(Laughter.)

DR. NEWMARK: Well, somebody mentioned Monterey earlier, and the fact is that they need to guarantee water available for new units, or the trades where they had to actually find water by making accommodations elsewhere.

But nobody's paying attention to the fact that you need to double that to account for the energy use to turn the appliances on and off in those units.

So, you know, the idea of actually having an energy and water planning tool, or regulation -- you know, cap, is not a bad idea.

MR. TRASK: Especially in places like

Monterey.

MS. DAVIS: I think we're going down this path, and I was just at the local government commission. The other piece of this, of course, is on the planning side and local government working in the stormwater management.

Again, it's getting us into the path of the integration of these issues as projects are being implemented on the ground. How are we managing those projects to maximize the environmental benefits and minimize pollution and other impacts.

And I think local government, to the extent that they are making requirements that get them out from under the onus of some of the stormwater regulation, are happy to go an extra step in requiring things that have water and energy conservation benefit.

Does that make sense?

MR. TRASK: Yes.

MR. KLEIN: Yes, so let's find one who's ready to try something and let's all get together and help them.

MS. DAVIS: Lewis Operating Corp within the San Bernardino County is really anxious to do

this.

MR. KLEIN: Okay.

MR. TRASK: What was the name of the company there, Martha?

MS. DAVIS: Lewis Operating Corporation. They are putting in 8000 homes in the Chino Basin. It's call the Preserve. They've already signed up for the California-friendly model home program. They were the first.

Their ability to continue to do a lot of the development is going to be predicated on their ability to control the stormwater and maximize water quality protection. Because otherwise Orange County gets pretty grumpy.

So, there's a lot of incentive to try and figure out how to make this the state of the art. So Randall Lewis is certainly one of the easiest master developers to work with. He's got a lot of initiative that you all would like, healthy cities, healthy communities, things like that. So, philosophically he's already there.

MR. TRASK: Well, folks, I see a lot of us just kind of staring off to space; it's kind of getting to our declining -- I can't even think anymore.

MS. LEWIS: Is there any other barriers anyone wants to quickly mention? I think what we've --

DR. BURTON: This is not a barrier, per se, but just thinking about what Lon said, and some of the other discussion, the way I see ag playing into this, and we shouldn't ignore it so much, is that may be water that's available that is associated with a lower per-unit energy than some other options.

So I don't know how we're going to integrate that, but there may be a lot of energy savings by not getting the water from someplace else and instead getting it from ag. And that plays into the integrated contracting with energy and water linked within that, so --

MR. TRASK: Right, and conversely it could go the other way around and --

DR. BURTON: Right, right.

MR. TRASK: -- Side Water District now selling their water and sending it much further than it would have had to have gone if they were --

DR. BURTON: Yeah, yeah.

DR. NEWMARK: One piece that I don't

know got on any of the lists, as I was absent for part of the afternoon discussion, but this issue of local and regional water planning, the idea that each individual municipality or water agency makes their own decisions about their source of their water and the reliability of their supply.

And pretty much doing that independent of their watershed and their groundwater basin.

Now, we've now had to, on the water side they're now being forced to do integrated groundwater basin management so they need to come to the table and discuss the local supply. But it doesn't really address the import issue.

And, you know, obviously the water guys aren't in the room right now, but I think there's some benefit to having sort of regional or basin water. I don't know what the right unit is of both energy and water planning, both to optimize the local use and reuse of supplies and to minimize the transport conveyance issues.

I think that ultimately that's going to be the issue for all the development in the state for both energy and water. Because of our transmission issues on the energy side, as well as for the conveyance issues on the water side, you

know. That is an institutional problem. It's not a technical problem.

MR. TRASK: And it would be people like Association of Governments, ABAG, SANDBAG, people like that that would probably be the most obvious people to do that.

MS. DICKINSON: And DWR. And DWR.

MR. TRASK: And DWR.

MS. LEWIS: Okay, why don't we wind up. I mean I think what we've gone through an interesting progression today. We started with talking about current strategies and the different stages of the water cycle to reduce energy and peak demand.

And we then talked about which of those strategies might increase energy use. Well, actually the strategies, themselves, focused on water use reduction. But we did talk about the ones that might increase energy use.

And then talked about which ones might increase or rather decrease peak energy use. And we finished with the discussion on barriers to implementing those.

So, I think that we've --

MR. TRASK: A pretty productive day.

MS. LEWIS: Hmm?

MR. TRASK: Very productive day from my point of view.

MS. LEWIS: I think so. I'm tired.

MR. TRASK: The other thing I'll close with is if folks could give some thought to what we want to do in future sessions. I'd thrown some ideas out there. I think we will go a month before we'll have another group session like this. The next meeting will be April 8th, which will be the public workshop. And that will be the opportunity to actually catch the ear of Commissioners Geesman and Boyd.

MS. DICKINSON: Do you have a date for the next work group meeting?

MR. TRASK: Should we shoot for two weeks after that, which would be the 21st, Thursday, the 21st?

MS. DICKINSON: 8th, well, that would be -- the 8th is a Friday.

MR. TRASK: Right.

MS. DICKINSON: So the 21st, oh, I can't, it's not a good day.

MR. TRASK: Not a good day?

MS. DICKINSON: We could do Earth Day,

which is the 22nd.

MR. TRASK: That's a Friday? I don't have any problem with the 22nd, does anybody else?

Okay, let's shoot that for our next working group meeting.

And I really just want to thank you all for making the efforts to come here and participate in this. This has been absolutely invaluable for me.

MR. KLEIN: Matt, I have a question. Given that we're getting a transcript of this meeting and we've got lots of notes, can we just attach the list that we've got to the ultimate transcript of this?

Because whoever wants to read the transcript is going to have to see that, otherwise it's going to be completely useless.

MR. TRASK: Right. Well, I can work with Peter on that, or we can just post it separately.

MR. KLEIN: Okay, that'd be helpful. Thank you.

DR. NEWMARK: Who maintains the current email address list? Because I didn't actually get the notes from the last meeting, but I got the

announcement about this one.

MR. TRASK: That would be me, although I'm planning to hand that off as soon as I can get some help.

DR. NEWMARK: Okay.

MR. TRASK: Okay. The first thing that I'm going to do when I get some help is assign to go over those lists and make sure I've got everybody covered, so.

MS. DICKINSON: Yeah, Richard Harris from East Bay MUD wants to be added.

MR. TRASK: Right. Very good. Thanks very much, everybody. See you on the 8th.

(Whereupon, at 4:29 p.m., the Working Group Meeting was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Meeting; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said meeting, nor in any way interested in outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of April, 2005.